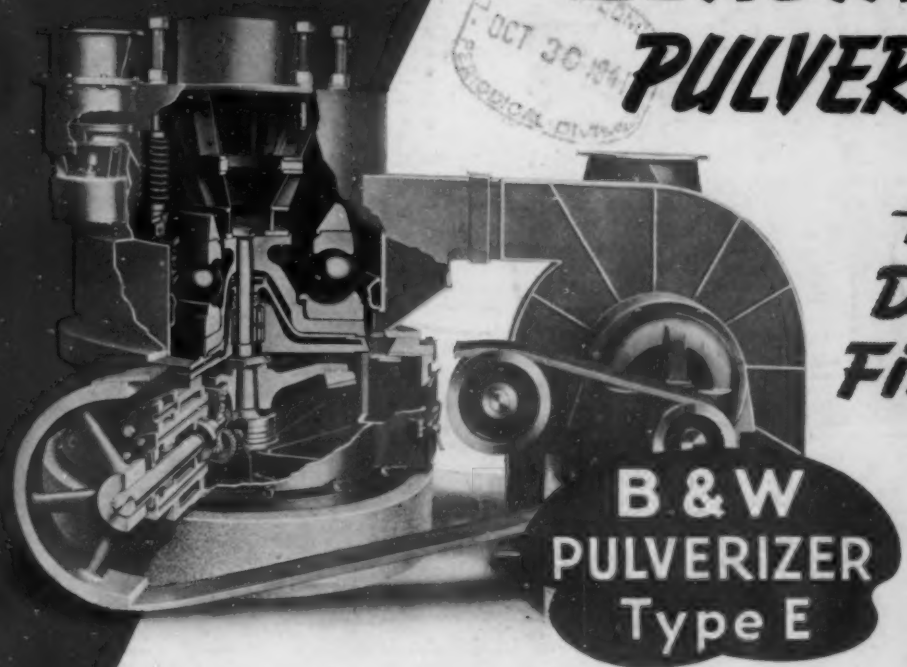
Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

OCTOBER, 1941

the LEADING PULVERIZER for Direct Firing



Successful direct firing of rotary cement kilns was developed by Babcock & Wilcox in 1932. Today, 97 cement kilns are direct-fired with B&W pulverizers. This is 44 per cent of all the direct-fired cement kilns now in service.

The modern pulverizer for economical direct firing is the B&W Pulverizer, Type E, illustrated on this page. The Type E mill employs the ball-bearing principle of grinding—used successfully in more than 700 installations.

THE BABCOCK & WILCOX COMPANY
85 Liberty Street New York, N. Y.

BABCOCK & WILCOX

LUDLOW-SAYLOR

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

for super-severe service

●

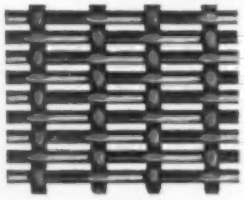
SUPER-HARD, SUPER-TOUGH, SUPER-STRONG

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

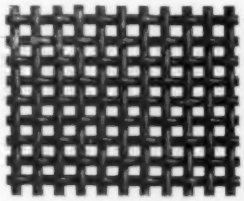
withstand abrasion longer —

endure vibration better —

resist fatigue to the utmost



REK-TANG
long-slot
weave



DOUBLE-CRIMP
square-mesh
weave

The background at top of page shows the "Perfect" Double-Crimp Weave.

The small cuts in the center panel compare REK-TANG Weave and Double-Crimp Weave.

The border at foot of page shows "Perfect" Double-Crimp Steel Wire Cloth which has been hot-dip galvanized after weaving.

Samples on request.

The LUDLOW-SAYLOR WIRE COMPANY
SAINT LOUIS

COUNSEL *for* DEFENSE

★

Meeting orders for **NEW** equipment

Easton has put more men to work, has greatly increased manufacturing facilities, and has taken other decisive steps to meet today's unprecedented demands. Industrial cars of all types, trailers, electric trucks and other material handling units are rolling out at a pace we once thought impossible.

★

Speed-ups with your **OLD** equipment

Because we are working against an abnormal backlog, Easton Sales Engineers are free to give their time and counsel toward helping you to get more efficient service with your old equipment. These men can give you new and useful ideas for immediate speed-ups and savings in handling and storage methods. It will pay you to take advantage of their free counsel.

★

Buying and selling **USED** equipment

Easton has created a "salvage headquarters" for used industrial wheeled haulage equipment. For the duration of the emergency Easton Sales Engineers will be available for counsel and assistance in the purchase or sale of used cars, electric trucks, trailers or other industrial handling equipment. If you have one or more units to sell, send a description with specifications. Engineering Counsel, Easton Car & Construction Company.

W. E. FARRELL, founder, president and first Easton Sales Engineer. Years of experience with the toughest material handling problems, a thorough knowledge of all types of industrial haulage equipment, a practical creative engineering ability . . . those are the assets which the Easton Sales Engineer brings to you in Free Counsel.

EASTON PRODUCTS

INDUSTRIAL CARS
for hand or locomotive haul, or electric

INDUSTRIAL TRAILERS AND SEMI-TRAILERS
for hand, tractor or motor-truck haul

ELECTRIC TRUCKS
load-carriers, low-lifts and tier-lifts

DUMP BODIES
for cars, trucks and trailers

ACCESSORY EQUIPMENT
turntables, track, skids, hoists

Over twenty-five years service to industry in the design and construction of cars, trucks and trailers for every industrial purpose. Capacities ranging from 2 to 250 tons.

EASTON

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Rock Products

Recognized the World Over as the Leader in Its Field

With which has been consolidated the journals *Cement and Engineering News* (founded 1896) and *Concrete Products* (established 1918)

VOL. 44, No. 10, OCTOBER, 1941

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ROCK PRODUCTS Bears the Twin Hall-Marks of Known Value.

Audit Bureau of Circulations ★ ABP

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Authentic facts relating to editorial scope and readership analysis.

(PUBLISHED MONTHLY AT CHICAGO, ILL., U. S. A.)

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Proved On the job...

OVER 4½ BILLION DEPENDABLE DETONATORS

SINCE the day Du Pont detonators were first offered for sale, over 4,700,000,000 have been purchased and used... a striking testimonial to the confidence blasters place in Du Pont Blasting Caps and Electric Blasting Caps.

At every point in the design, manufacture and testing of Du Pont detonators we have adhered to the principle that ***the most dependable detonator is the safest detonator***. Thus, whether you are doing primary or secondary blasting in quarries... using electric caps, or caps and fuse . . . you can count on dependable, safe performance under all field conditions.

Du Pont Electric Blasting Caps

Du Pont Electric Blasting Caps are a product of constant research, precision manufacturing and careful testing.

For increased safety in secondary blasting, Du Pont Electric Caps with leg wires of 12′, or less, are equipped with the Du Pont metal foil, shielded shunt. This exclusive Du Pont safety feature holds leg wires firmly together for their entire bared length, assuring a positive short circuit up to the moment you remove the shield. In addition, an inner layer of highly efficient insulating material protects the short circuited ends from outside currents.

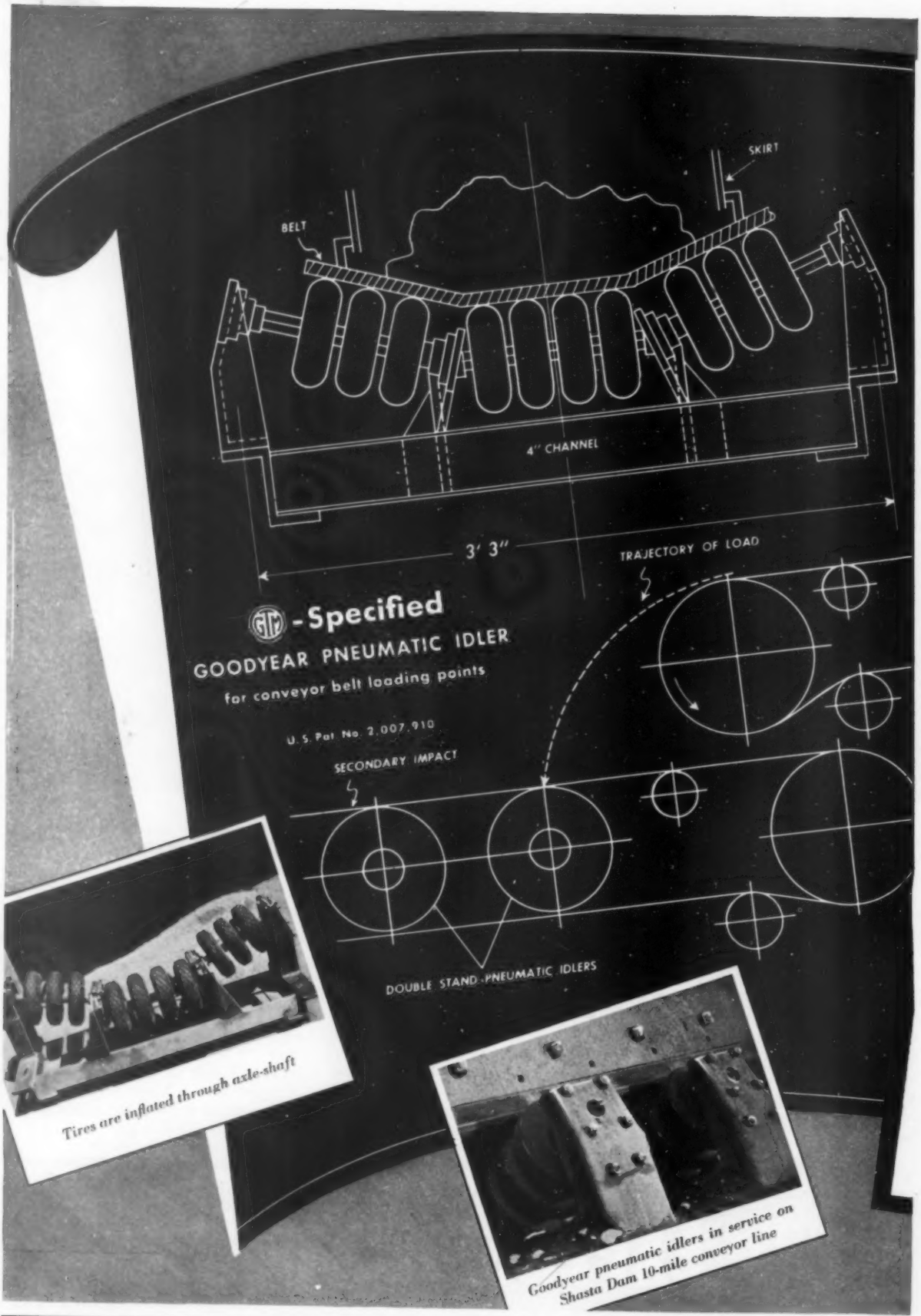
For convenience and added safety a paper band holds the leg wires of all Du Pont Electric Caps in a convenient figure-eight fold. Because this band prevents tangling and kinking of wires, it materially lessens the danger of misfires due to damaged insulation or broken wires.

Du Pont Regular Blasting Caps

Du Pont Regular Blasting Caps, for use with fuse, are manufactured to rigid standards with the most modern equipment and testing devices. Like Du Pont Electric Caps, you can depend on them for the dependability that means greater safety in blasting.

E. I. DU PONT DE NEMOURS & COMPANY (INC.), EXPLOSIVES DEPARTMENT, WILMINGTON, DELAWARE

DU PONT REG. U.S. PAT. OFF. **EXPLOSIVES** *and* **BLASTING ACCESSORIES**


SKIRT
BELT
4" CHANNEL
3' 3"
TRAJECTORY OF LOAD
GTP-Specified
GOODYEAR PNEUMATIC IDLER
for conveyor belt loading points
U. S. Pat. No. 2,007,910
SECONDARY IMPACT
DOUBLE STAND PNEUMATIC IDLERS
Tires are inflated through axle-shaft
Goodyear pneumatic idlers in service on Shasta Dam 10-mile conveyor line

Another Great New Advance
IN CONVEYOR BELT PERFORMANCE

Now—PNEUMATIC CUSHIONING at loading points TRIPLES *belt-life in heavy-duty service*

TODAY Goodyear takes pride in announcing the greatest contribution to conveyor belt engineering since its conquest of mildew — a new method of air-cushioning heavy impacts at the loading point which protects belts from damage and greatly prolongs their service life.

It started at Grand Coulee Dam several years ago. There, huge 60"-wide run-of-pit conveyor belts were being cut, gouged and smashed to pieces by the constant impact of boulders running up to three feet in diameter and *more than a ton in weight.* Under these brutal conditions heaviest construction belts were failing in six to seven million tons' service.

The first remedy considered was rubber-covered idlers. But these did not "give" enough — did not have sufficient energy-absorbing capacity. Cushioning the idler supports offered only little better protection — the belt would still absorb most of the impact before the cushioning came into play.

At this point, careful engineering analysis suggested a startling solution to the G.T.M. — Goodyear Technical Man. It was — *pneumatic tires!* Application of the laws of energy indicated that tires alone had both the capacity and the life to absorb these impacts.

At the G.T.M.'s direction a stand of pneumatic industrial tires, mounted on a free-rotating shaft, was placed beneath the belt, directly under the trajectory of the load. A second stand of tires was set two feet distant along the line of belt-travel to absorb secondary impacts.

With this air-cushioned protection, a new set of belts handled 21,000,000 tons of rock — *three times greater tonnage than previous belts* — and the belts were still in good condition when recently removed on completion of the job.

Not only does this new, cushioned loading safeguard belts from smashing abuse, but it prevents cuts and gouges in the cover, and keeps abrasive material from being trapped between the skirt boards and the belt.

Today, on Goodyear's great 10-mile conveyor belt system at Shasta Dam no less than 520 tires are being used for cushioning — two banks of ten tires at each of the 26 transfer loading points—to insure maximum belt life.

The proper application of pneumatic cushioning is dependent upon a number of factors. Goodyear has now resolved complete data on the quantitative ability of belts to absorb impact-energy in terms of inch-pounds per inch of belt width, per inch of belt thickness — and from this has designed tire assemblies to meet all conditions likely to be encountered.

If your belts are failing from abuse at the loading point, it will pay you to consult the G.T.M. on this new Goodyear development, as well as other exclusive advantages that make Goodyear conveyor belts the world's first choice. To bring him to your office, write Goodyear, Akron, Ohio or Los Angeles, California—or phone the nearest Goodyear Mechanical Rubber Goods Distributor.

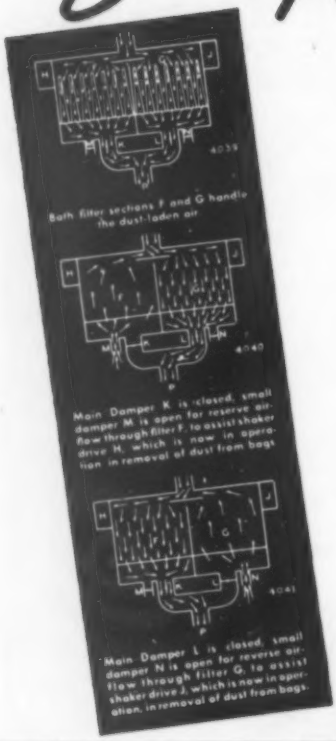
THE GREATEST NAME IN RUBBER

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR CONVEYOR BELTS THAN ON ANY OTHER KIND

● Three Sly Dust Filters Exhausting Packing Machines and Conveyors in a large Cement Plant. This firm has a number of other Sly Dust Filters.

A Better Return ON YOUR INVESTMENT with SLY DUST CONTROL


Both filter sections F and G handle the dust-laden air.
Main Damper K is closed, small damper M is open for reverse air-flow through filter F, to assist shaker drive H, which is now in operation in removal of dust from bags.
Main Damper L is closed, small damper N is open for reverse air-flow through filter G, to assist shaker drive J, which is now in operation, in removal of dust from bags.

● Sly Dust Control Systems offer automatic control, eliminating the human element. This means greater efficiency and longer life—a better return on your investment.

And, if desired, *Continuous* Operation! In some industrial processes dust control must be continuous—*without interruption*. See diagrams at left.

Sly Dust Filters clean the air completely by *filtering* the dust out of it. They have *greater* filtering capacity per cubic foot than any other make, due to the *Special* flat cloth bag pioneered and perfected by Sly. Sly Dust Filters are not expensive. Many plants in the cement and rock products field are definitely profiting from the use of Sly Dust Control.

Ask for Dust Control Bulletin 98 and send details of your problem. There is no obligation, and Sly's experienced engineers will be glad to help you.

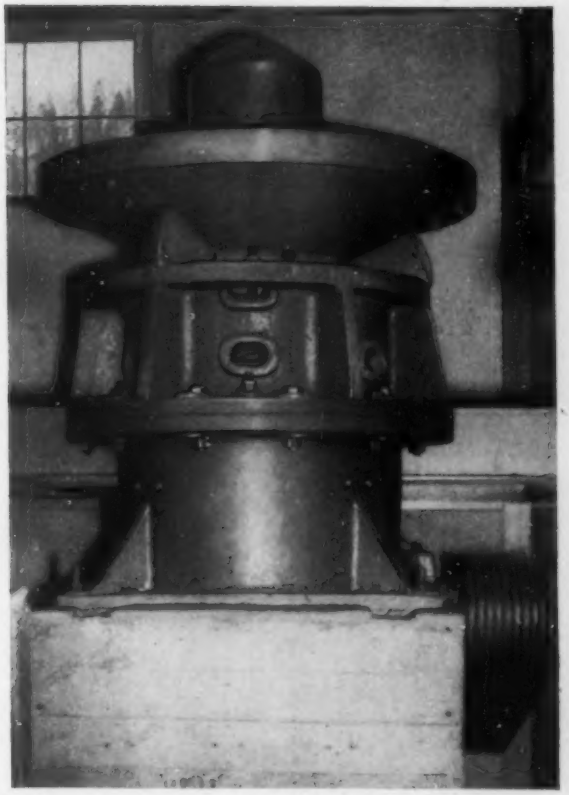
THE W. W. SLY MFG. CO.
4746 TRAIN AVE.
CLEVELAND, OHIO

SLY
INDUSTRIAL DUST CONTROL

Do a Better Job

at less cost with a

MULTI-STAGE FINE REDUCTION CRUSHER



WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Sinkers
Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

Any rock crusher will work at highest efficiency and greatest economy of operation and maintenance when (1) the feed is uniform in size, and (2) when the feed is distributed evenly in the crushing chamber, and is of sufficient quantity to enable the machine to operate at full load.

These conditions are met by the design of the Traylor-Stearns Multi-Stage Fine Reduction Crusher. The upper stage is both a preliminary crusher (it does about half of the desired crushing), and a feeder for the lower stage, distributing the material EVENLY ALL AROUND the crushing chamber of the latter. Independently operated adjustment devices control the size and quantity of feed to the lower stage and the size of the finished product of the machine.

The product is fine (3/16" to 9/16" is the range in different sizes of machine), it is of uniform character and contains minimum percentages of waste fines and slabs, and it is produced at low cost (varying from 6/10 H.P. to 9/10 H.P. per ton—a fact that should be of particular interest to you!)

The Multi-Stage has strength to spare, simplicity of design that appeals and is non-chokable at any setting. It is automatically lubricated, and is adequately guarded against destructive dust and grit, and against breakage by tramp steel. Best of all, it is most reasonably priced, as fine reduction machines go. Investigate this machine thoroughly without delay, if you need very fine sizes in large quantity.

SEE OUR BULLETIN No. 113

TRAYLOR

ENGINEERING & MANUFACTURING CO.

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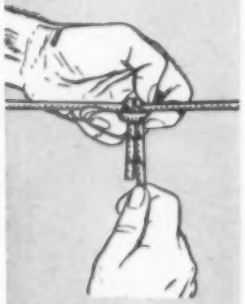
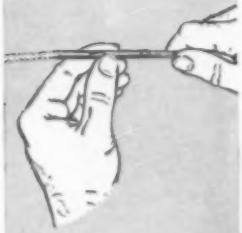
1. Tie through cartridge.



2. Half hitch branch to main line.

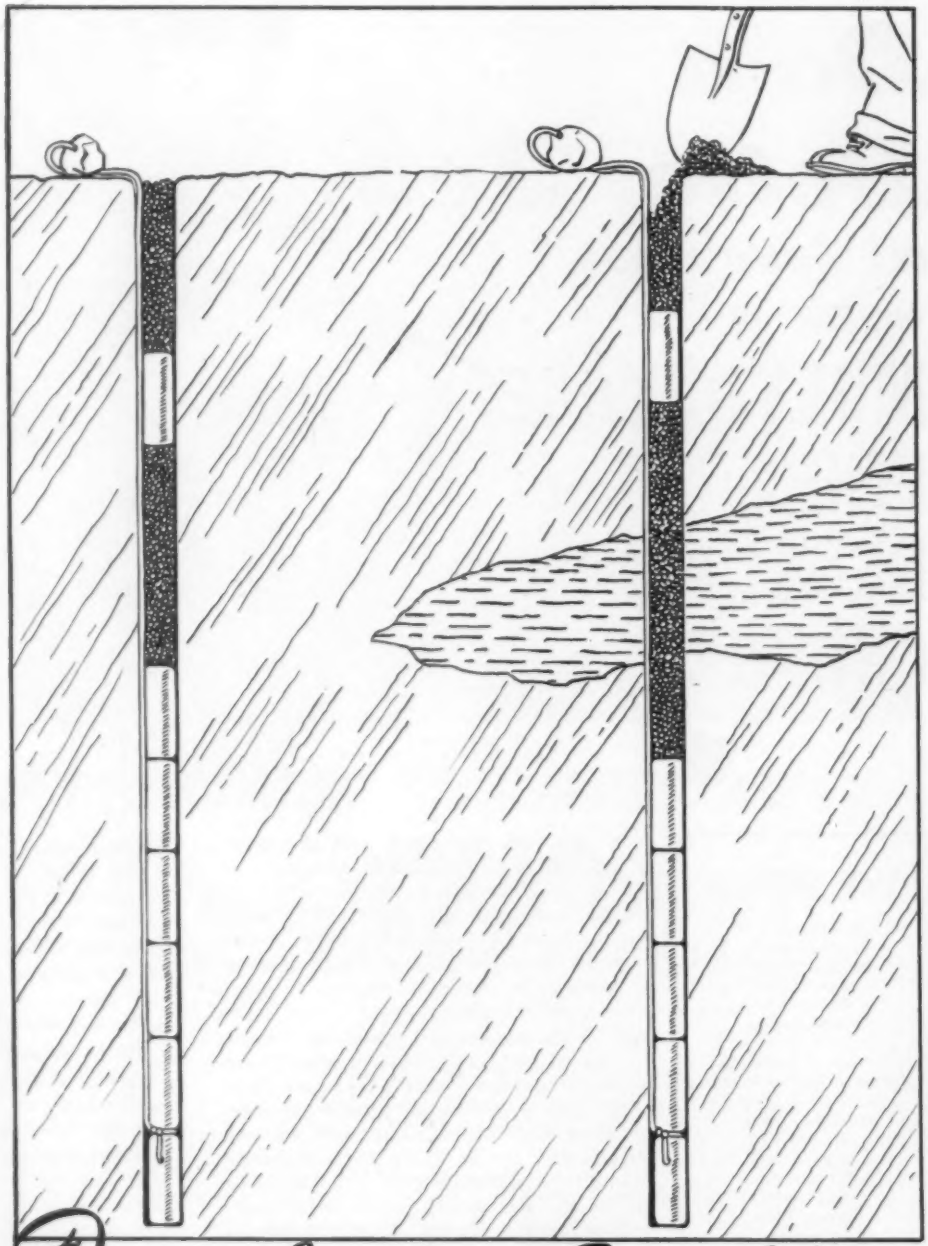
3. Connect main line lengths with square knot.



4. Fuse and cap on end of main line.

IMPORTANT

Branch lines should lead away from main lines at *right angles*. Avoid kinks and small loops.



Deck Loading Simplified

When deck loads are advisable, you can make them without extra caps or labor—when you detonate with Primacord.

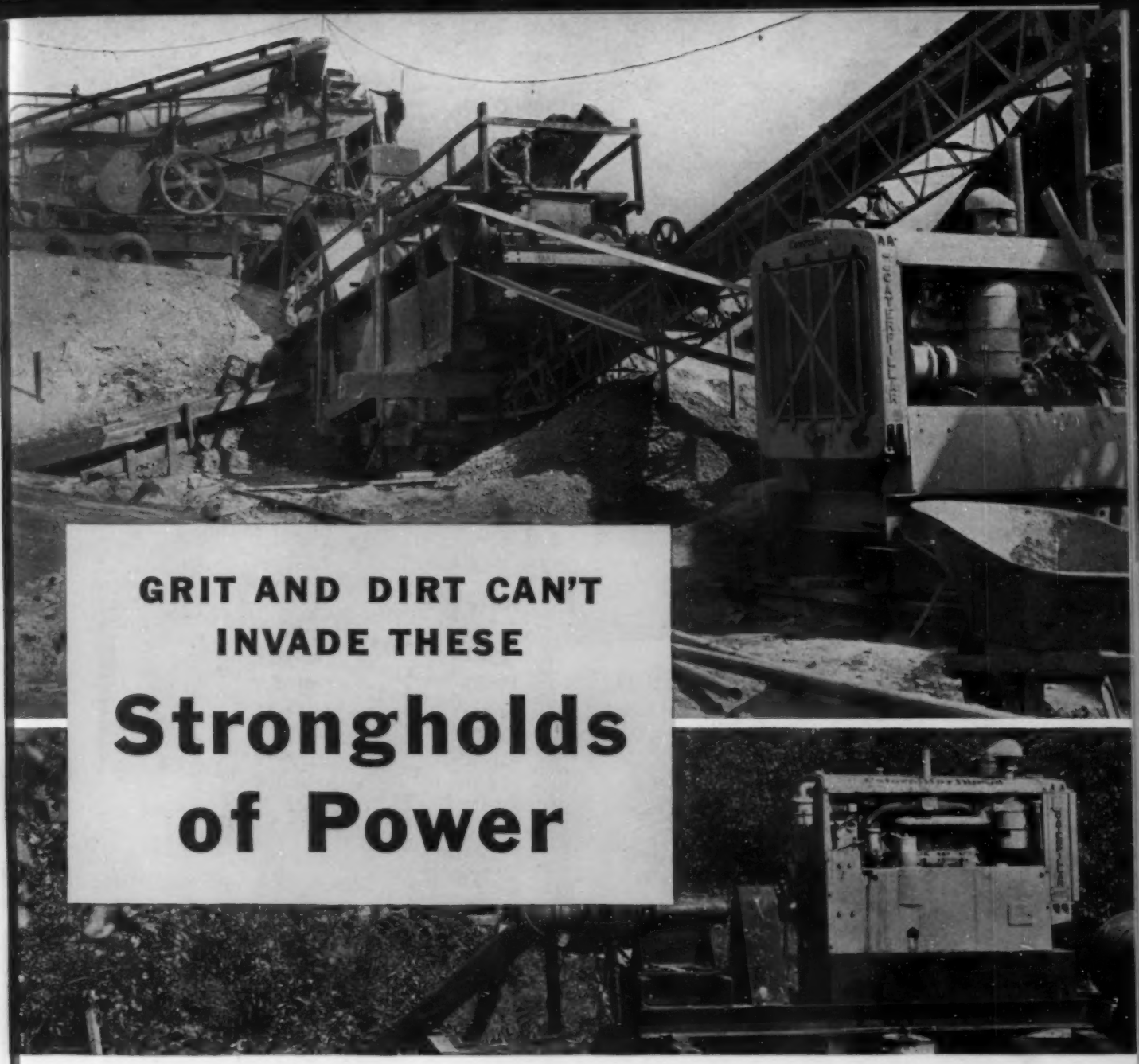
Why? Because each cartridge in the hole is detonated directly by the Primacord and will "go" with the force of a primer cartridge, even when charges are "broken." Send for the Primacord Booklet—it's free.

PRIMACORD BICKFORD
Detonating Fuse

PD-37

THE ENSIGN-BICKFORD COMPANY • SIMSBURY, CONN.

Makers of Cordeau-Bickford Detonating Fuse—and Safety Fuse since 1836



GRIT AND DIRT CAN'T INVADE THESE Strongholds of Power

"CATERPILLAR" Diesel Engines have many outstanding features — for economy, dependability and long life — but none that make them more ideal for crusher work than their devices for protection against the "blitzkrieg" of grit and dirt.

These engines are ***sealed at every point*** at which harmful foreign substances might enter:

- ***Large, three-stage oil-bath air cleaner. Super-efficient absorbent type fuel filter*** (built expressly for "Caterpillar" Diesels).
- ***Combination absorbent and metal-edge type oil filters*** (for double protection). ***Completely enclosed valve-operating mechanism and fly-ball governor.***
- ***Covers, oil pan, housings, etc.,*** are oil and dust tight.

And that isn't all! "Caterpillar" Diesels have these further features:

- ***A fuel system*** that requires absolutely no adjustment whatever; and is so efficient that it burns, ***completely and cleanly,*** even such extra-cheap fuel as No. 3 domestic burner oil.
- ***"Hi-Electro" hardened crankshaft journals and cylinder liners***—having far greater wear-resistance than can be obtained from any other practical method of heat-treatment.
- ***Dual cooling.*** Both oil and water are kept at proper temperatures for most efficient engine performance. Means longer life, lower maintenance for bearings, pistons, rings and liners.

And this is still only part of the story of "Caterpillar" supremacy in the Diesel-power field. Your "Caterpillar" dealer, and the FREE LITERATURE we'll be glad to send you, can tell you a lot more.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

MICHIGAN. Four "Caterpillar" Diesel Engines (two D13000s and two D4400s) power this gravel plant near Marion, Mich., producing 75 cu. yds. of gravel per hour. Engines drive Pioneer crusher, washing plant, log washer and 6-inch centrifugal pump. In operation 14 hours a day. (The pump-driving "Caterpillar" Diesel D4400 in lower view is used with the gravel plant shown in main picture.) These engines are using 7¼c fuel.

CATERPILLAR

DIESEL ENGINES AND ELECTRIC SETS

TRACK-TYPE TRACTORS • ROAD MACHINERY

are you throwing away DOLLARS IN DUST?

FOUNDRY SHAKE-OUTS

Buell Collectors are widely used to collect dust in shake-out rooms, to prevent dust escaping from tumbling barrels, and to reclaim dust from the cleaning of molding sand.

MACHINING OPERATIONS

In machining operations such as grinding, buffing, milling, planing, etc., Buell Dust Collectors, applied to exhaust hood systems, have an outstanding record of high efficiency.

WASTE HEAT GASES

Contamination of product in dryers utilizing dust laden waste heat gases is eliminated by the use of Buell cyclones, which have been found to have higher efficiency and lower power consumption than collectors which they replaced.

FOOD PROCESSING

Buell has developed collectors of special design and notable efficiency for many food products, such as powdered coffee, powdered milk, etc. Fabrication of stainless steel and hinged construction for easy cleaning meet all pure food law requirements.

CHEMICAL PRODUCTION

Buell Dust Collectors have proved highly efficient in removing contaminating flue dust from gases (such as sulphur dioxide in sulphuric acid manufacture), and in salvaging valuable dust (as in spray drying of magnesium hydrate) normally lost in exhaust.

THESE ARE JUST A FEW of the many applications in which Buell (van Tongeren) Dust Collectors are successfully serving such leaders of industry as Detroit Edison Co., Dow Chemical Co., Ford Motor Co., Lone Star Cement Corp., Nestle's Milk Products, Inc., and many others. The Buell Dust Technician in your territory will be glad to discuss the application of Buell (van Tongeren) Dust Collectors to your business.

Write for a copy of 24-page "Bulletin R-10, Dust in Industry"

BUELL ENGINEERING CO., Inc.

Suite 5000, 2 Cedar Street, New York

Nation-wide service through offices of either Buell Engineering Co. or B. F. Sturtevant Co.

buell

DUST COLLECTORS

Modern Aggregate Plants ...by

TELSMITH

Like hundreds of Telsmith plants all over the world, these new rock crushing and gravel washing plants have operated smoothly, efficiently and profitably right from the start. Most of them are operating on defense work, where the production pressure is tremendous. A Telsmith plant means the latest in equipment—crushers to bin gates—Telsmith-designed-and-built for extra staying power, greater flexibility and capacity, lower operating and upkeep costs. And Telsmith *Balanced* Engineering Service and centralized responsibility fits that plant to your own particular needs. *Write for Bulletin EP-11.*

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Dublin, Va.

Crystal Concrete
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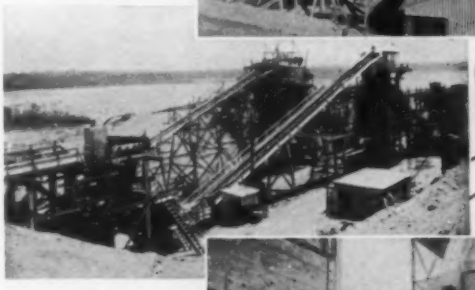
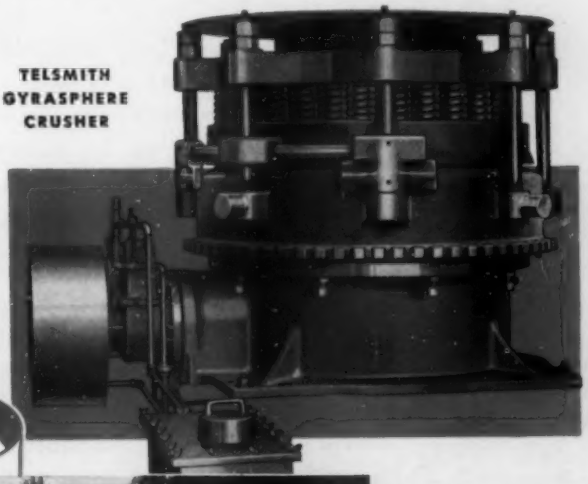
Braintree, Mass.



TELSMITH
GYRASPHERE
CRUSHER



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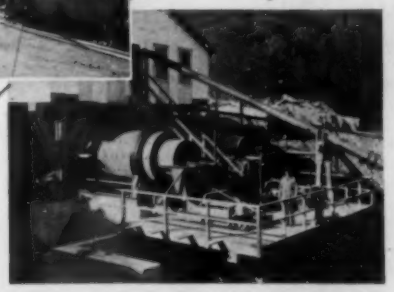
Rossoff Sand & Gravel Corp.
Kerhonkson, N. Y.



Boston Sand & Gravel Co.
East Greenwich, R. I.

Banks Stone & Sand Co.
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A 15 TIME FAVORITE
for Rock Service
PENNSYLVANIA GLASS SAND CORP. INSTALLS LORAIN NO. 15
• Here's a case where numbers, rather than words, best describe the qualifications of Lorains for rock service. This new 1¼-yd. shovel is the 15th Lorain purchased by the Pennsylvania Glass Sand Corp., Lewistown, Pa. for quarry duty. It's on the job because each of 14 other Lorains did an outstanding job in rock —and that's really a record to shoot at.
Lorain rock shovels range in capacity from 1 to 2 yds. Turntables are built to Center Drive design for direct-to-the-point power transmission, increased capacities and a stronger, more simplified construction. Every unit is mounted on a rugged, 2-speed Center "Chain" Drive crawler, and is equipped with heavy-duty, all-welded steel shovel boom. Catalogs describing these rock-proved machines will be sent on request.
THE THEW SHOVEL COMPANY
LORAIN, OHIO
THEW CENTER DRIVE
REG. U.S. PAT. OFF.
3/8 to 2 YD. LORAINS

STRONG AS A GRIZZLY...

handles like a kitten

Bethlehem Purple Strand Form-set Wire Rope combines two of the most important qualities a wire rope can have: strength and easy handling.

Bethlehem Purple Strand is made of 100 per cent Improved Plow Steel, the strongest, toughest steel used in wire rope.

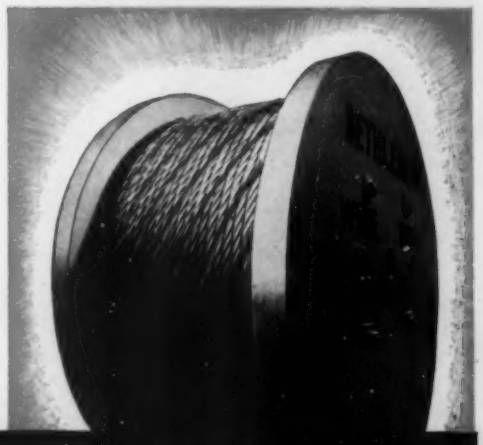
Preforming of this husky high-strength steel produces a rope that is easy to handle as well as rugged. Form-set, Bethlehem's preformed rope, is relaxed, less apt to kink or loop. Cut ends need not be seized. Broken wires won't bristle out of place. And finally, because the rope is preformed, it is better able to stand bending fatigue, thus materially increasing service.

Next time you buy wire rope for a job that requires both strength and ease of handling, get Purple Strand Form-set. It has the stamina for long service, plus the workability that speeds up operations.

PURPLE STRAND

FORM-SET

WIRE ROPE



BETHLEHEM STEEL

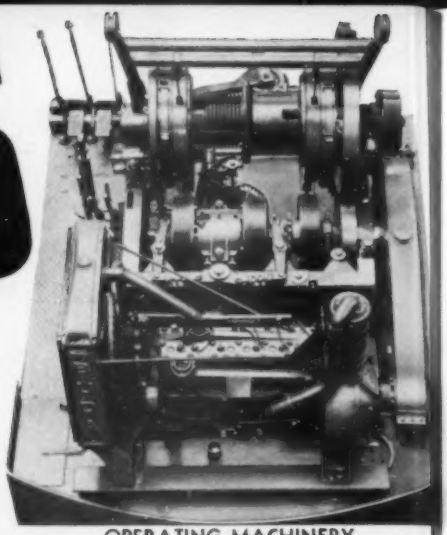
BETHLEHEM STEEL COMPANY

FEATURES

THAT DEFEND YOUR SPECIAL INTERESTS

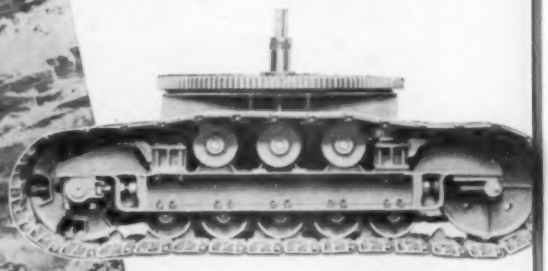
What makes a shovel "tick" is of vital concern to every quarry operator. It provides him with a basis for determining the merits of rock digging equipment before he buys. Study the MARION features described here in that light. They back MARION'S DEPENDABLE PERFORMANCE every yard of the way—giving sound reasons for modernizing with MARIONS.

THE MARION STEAM SHOVEL COMPANY
MARION, OHIO, U. S. A.



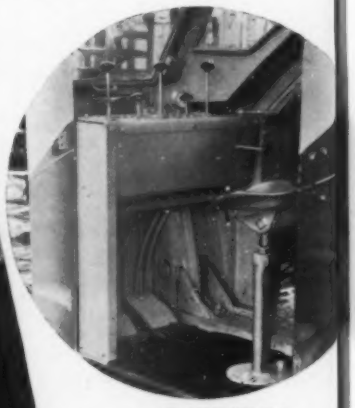
OPERATING MACHINERY

Compact . . . accessible . . . for ease of maintenance and operating simplicity.



LOWER FRAME

Maximum strength with light weight, self-cleaning, non-clogging, non-binding crawlers.

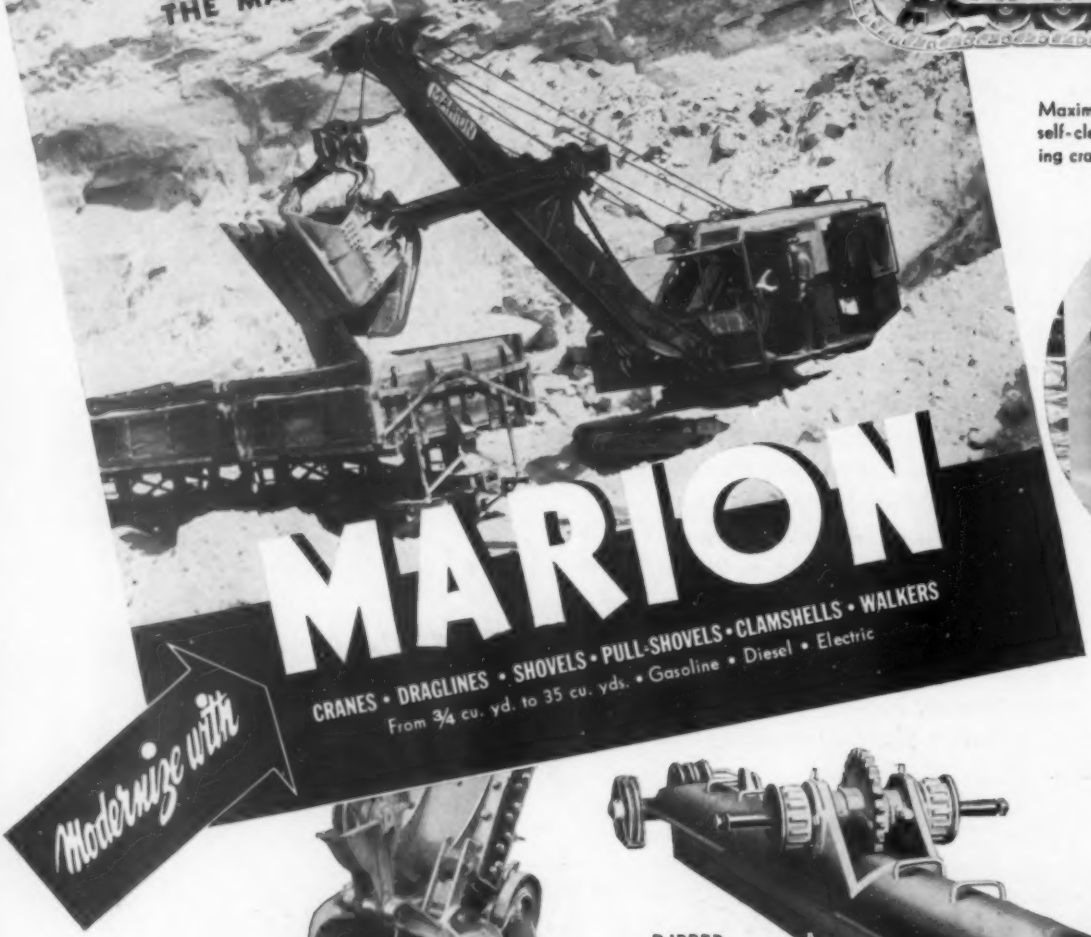


AIR CONTROL

of all operating movements introduces finger-tip control and a new conception of accuracy over all previous methods, and with a minimum of linkage and levers.

SHOVEL BOOM

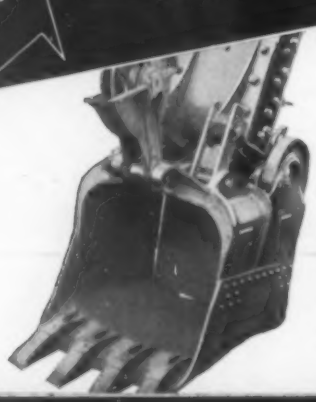
Welded, all-steel box or tubular construction built deep and wide to withstand the stresses incident to heavy digging.



MARION

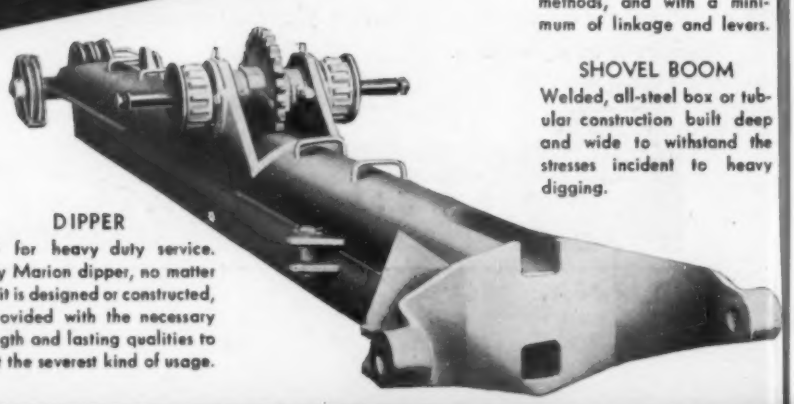
CRANES • DRAGLINES • SHOVELS • PULL-SHOVELS • CLAMSHELLS • WALKERS
From ¾ cu. yd. to 35 cu. yds. • Gasoline • Diesel • Electric

Modernize with



DIPPER

Built for heavy duty service. Every Marion dipper, no matter how it is designed or constructed, is provided with the necessary strength and lasting qualities to meet the severest kind of usage.



YOU CAN BET YOUR BOTTOM DOLLAR ON EXCELLAY!

A WIRE ROPE ENGINEER REPORTS TO HIS BOSS

Boss — the operations out here make me dizzy! Gigantic, stupendous and colossal are just weak understatements when used to describe any phase of the work on the mighty Shasta Dam Project!

And American Tiger Brand Excellay is really doing a noble job by keeping important equipment running on schedule. When operators on a job like this say, "That's good rope," you can bet your bottom dollar they're not making any idle statement!

This picture is a honey — shows the boom of an electric shovel whose dipper loads 6 tons of material at one scoop, and in the background is the 460-foot high head tower which supports the 7 long cableways that deliver concrete to the forms.

By the way, the head tower is 25 feet taller than a 31-story building!

al

A GOOD way to get good service out of your wire rope is to take full advantage of the wide experiences of American Tiger Brand Wire Rope Engineers. Our field engineers are interested in seeing that you get a full dollar's value out of every dollar you invest in wire rope. That's why you'll find them right out where the rope is used—that's where they spend most of their time. There's no better place to keep in touch with wire rope performance.

These engineers are well qualified to give you exactly the service you need—speedily, too! Besides helping you to select the most practical wire rope for a particular job, they can often give you valuable, money-saving tips on operation. And there's no obligation.

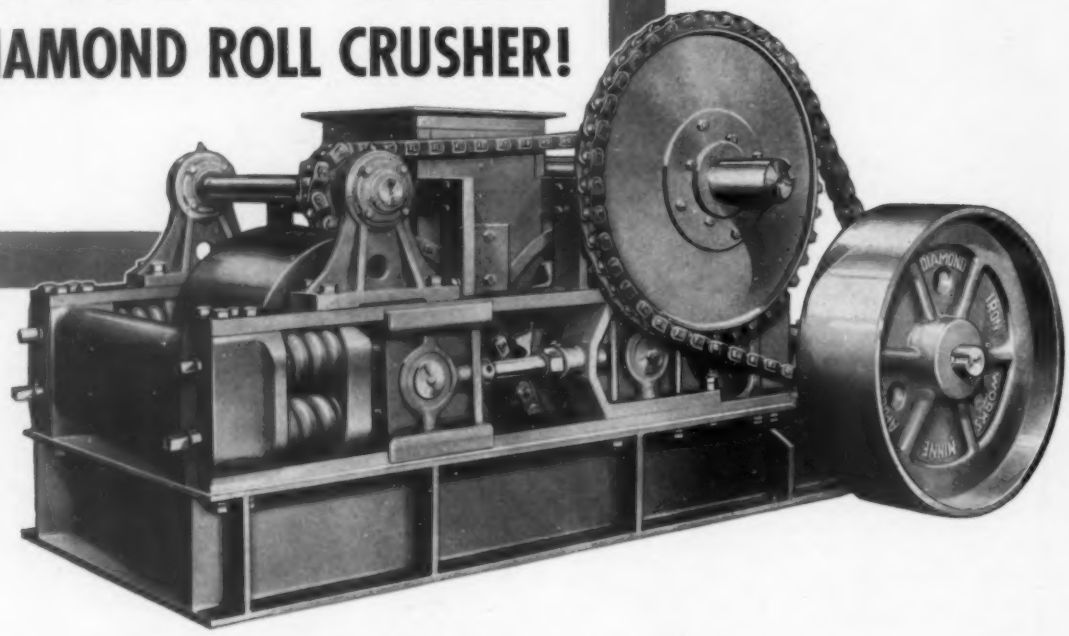
American Tiger Brand Wire Rope is made in all constructions and grades. Call on one of our engineers to help you specify the types best suited for your job.

EXCELLAY *Preformed* **WIRE ROPE**

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York
COLUMBIA STEEL COMPANY
San Francisco
United States Steel Export Company, New York

UNITED STATES STEEL

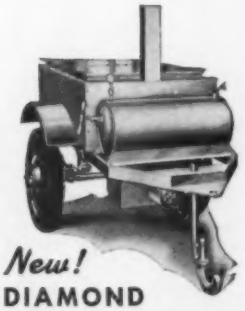
54" x 24"
A NEW SIZE
DIAMOND ROLL CRUSHER!



NOW MORE FLEXIBLE THAN EVER!

DIAMOND roll crushers have always been engineered to give the operator the greatest flexibility in choice of needed sizes and in roller adjustment for product size... DIAMOND roll crushers are daily helping stepped-up production by furnishing greater capacity and day-after-day, dependable, trouble-free operation.

Write us for bulletin D-41-C fully illustrating and describing DIAMOND roll crushers. Ask us also for bulletins on jaw crushers, conveyors and portable or stationary complete plants.



New!
DIAMOND
Portable Tar Kettle

Many features of modern design that make it an outstanding piece of construction equipment. Write for information and prices today.

DIAMAHR

DIAMOND IRON WORKS, INC.
ESTABLISHED 1880
AND THE MAHR MANUFACTURING CO. DIVISION
MINNEAPOLIS, MINNESOTA, U. S. A.

Rock Products

309 WEST JACKSON BOULEVARD
CHICAGO, ILL.

October 1, 1941

Dear Subscriber:

Bishop, Calif.: Coming back from one of the Central Valley Project's rock products' plants the other day, one of us picked up a workman walking toward town. He said he was a welder working in one of the new war material plants. Had hurt his eyes by working too close to an electric welding flame. His pal was using his car, so he was hitch-hiking, after seeing the plant doctor. He said, "I sure hate to lose today's (Saturday's) pay; it's a $36 day for me; have been working 12 hours a day at $2 per hour; Saturdays are time-and-a-half ($3 per hr.) days." (If one of us suddenly drops this editorial project, it may be because of getting this guy's job while he is incapacitated.) - and, we in Chicago could hardly blame an editor if he accepted the $156 per week job as a welder!

Hermann, Mo.: On the outskirts of this town is the plant and quarry of the Hermann Silica Sand Co. It is located in such rugged topography that the company's workmen have to park their modern cars at the town boundary and ride "their mountain goat" - a model A Ford - to work. This summer a special road district was formed, and a passable road to the plant is under construction - we presume this is a legitimate "access road", according to the President's definition.

Toledo, Ohio: Apropos of the item on this page of our September Staff Letter re-limitations on employers' freedom of speech, under the National Labor Relations Act, we find an interesting lawsuit filed in the U. S. District Court here on August 19. The president of the Gypsum, Ohio, local of the United Mine Workers of America (C.I.O.) is suing the county (Ottawa) sheriff, the county prosecutor, the U. S. Gypsum Co. attorney, and the company itself for $500,000, charging violation of the civil rights of the C.I.O. strikers, including "the right of freedom of speech, assembly and the right of peaceful picketing and of exercising rights under the National Labor Relations Act." The suit grew out of a riot in which numerous strikers were arrested and subjected to some of the indignities they are more accustomed to inflicting on others than accepting themselves.

Knoxville, Tenn.: A sand and gravel producer here apparently did not heed the warnings of the National Association of his industry, and is in trouble. Warning has been made time and again that when in doubt about the application of the Federal Wage and Hour Act, take the safe view that it does apply until officially informed otherwise. Oliver King Sand and Lime Co., waived defense of a suit filed by the district wage-hour administrator, and agreed to pay 135 employes "difference in wages paid and wages that should have been paid," since October, 1938. Under terms of the agreement back wages will be paid in 90-day installments. One-fourth will be

paid during the first and second periods and the remaining half during the third 90 days. Court action taken by the government will not prohibit shipment of goods on hand by the company, the agreement states. The suit was filed by Philip B. Fleming, administrator of the wages and hours division of the U. S. Department of Labor, under provisions of the Fair Labor Standards Act of 1938.

Chicago, Ill.: Through the Union Label Trades Department of the American Federation of Labor, the United Cement, Lime and Gypsum Workers' International Union here has announced that seven firms had signed Union Label contracts. They are as follows: Woodville Lime Products Co., Woodville, Ohio; National Mortar and Supply Co., Gibsonburg, Ohio; Roche Harbor Lime and Cement Co., Friday Harbor, Wash.; Spokane Portland Cement Co., Irvin, Wash.; Washington-Idaho Lime Products Co., Orofino, Wash. Subsequently, Grove City Limestone Co., Osborne, Penn., was added to the list.

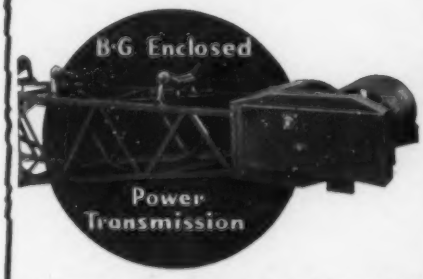
Bishop, Calif.: A sand and gravel company whose plant was visited recently is taking no chances of violation of the Federal wage and hour law governing production of material for the government. Large signs are posted in the plant which read: "THIS MEANS YOU - Any hourly rate employee who works more than 8 hours in one day, or more than 40 hours in one week is automatically DISCHARGED". And that's that.

Santa Cruz, Calif.: Santa Cruz Portland Cement Co., Davenport, defendant in a $1,000,000 suit for alleged damage to neighboring crops by dust, is claiming as part of its defense, that the new process kilns installed there create a minimum of dust. The new process is the Lepol process, in which the hot gases (and dusts) from the kiln are sucked down through moving grates to preheat the raw materials before entry into the kiln proper.

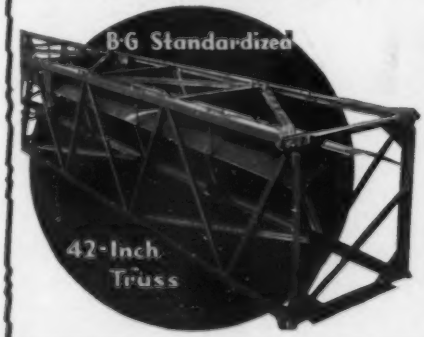
Buffalo, N.Y.: National Gypsum Co. here is the subject of a laudatory article in the September 12 issue of Printers' Ink, exponent of the publishing and advertising business. The article is entitled "Oversold, yet company begins first consumer copy and a 10-year program". Melvin H. Baker, who displays no lack of faith in the future, is quoted (in part) as follows: "Seven years ago many of our people thought us over-ambitious in pursuing a policy of plant expansion. Since that time National has grown from a six-plant operation to one with 21 active mills. In 1935 that progress seemed extravagant. Today's market proves the vision of increasing production facilities. Today our company is so financially strong that we are benefiting from capital as low in cost as that of companies in business for two and three generations. We have a complete line of over 150 major products in seven basic industries. And we have an organization considered the best of its kind in the world. These jobs have been nearly completed. Now we are ready to turn to another important phase of National's development. For the last three years we have become increasingly conscious of the need for the building of a strong advertising program. Our further expansion will largely depend on how well we tell the architect, builder, carpenter, plasterer, and the ultimate consumer the quality story of Gold Bond products. We have delayed this program until our production and sales organization has been developed to cover every market with every wall and ceiling product. That was lateral expansion. Now we are ready to burrow deep into each individual market. By creating a public acceptance for our products we hope to get a greater volume out of each territory."

The Staff

Via Barber-Greenes



B-G Standardized Units include 24" and 42" deep Steel Truss, Enclosed Power Transmission, Head End Drives, Wrap Drives, Various Types of Take-Ups, A Frames, Walkways, etc. All unit parts and assemblies are accurately rated, giving the individuality of a "tailor made" conveyor plus the many additional advantages of standardization.



BELT conveyors offer by far the cheapest means of handling bulk materials. Barber-Greenes offer many additional advantages.

Having Pre-Engineered Standardized Unit Parts and Assemblies, the B-G Sales Engineer is able to make a quicker, more accurate price estimate, the Engineering Department is able to make a quicker, more practical layout.

This B-G Standardization lets us carry the parts in stock for practically any conveyor requirement — giving prompt shipment.

Erection is tremendously speeded up and simplified, and perfect alignment is assured.

B-G Standardization allows the addition of standard accessories later, and Barber-Greene Standardized Sectional Construction permits unequalled change of set-up to meet changing conditions.

B-G Carriers are recognized for their excellent design and performance records. They are available with plain, ball, or roller bearings. If you are replacing carriers or erecting your own conveyor, investigate B-G Carriers.

Solving your handling problems is our business.

Standardized Material-Handling Machines

BARBER GREENE

AURORA, ILLINOIS

38-10

1892 ADVERTISEMENT IN THE ENGINEERING AND MINING JOURNAL

ROBINS CONVEYING BELTS.
THOMAS ROBINS, Jr., 120 Liberty St., New York, N. Y.

Rolling Along
Since '91

Ever since the above advertisement was inserted, the unfolding story of the ROBINS CONVEYING BELT COMPANY has been appearing in the records of Industry.

Back in the 'Nineties' Thomas Robins began his first experiment with 'conveying belts' carrying bulk materials. Whether he knew it then or not, another milestone in America's industrial progress had been reached, and another substantial business was launched.

It has been a long time since an advertisement like this 'old timer' told the whole story of Robins. The success of the Belt Conveyor led to the introduction by Robins of Troughing Idlers with ball and roller bearings; the first Automatic Tripper and the first Portable Conveyor. Robins Travelling Bridges and Unloading Towers are found all over the world; and from this same company came the first mechanical system of ore bedding and reclaiming. Robins also made the original mechanical Vibrating Screen for sizing materials. GYREX, VIBREX and ELIPTEX are trade names familiar to plant operators wherever Vibrating Screens are used.

Industries basic bulk materials are rolling along on Robins Material Handling Machinery

Robins Makes:

BELT CONVEYORS
IDLERS
BELT TRAINERS
TRIPPERS
FEEDERS
BUCKET ELEVATORS
VIBRATING SCREENS
SCREEN CLOTH
SKIP HOISTS
WEIGH LARRIES
BIN GATES
COAL CRUSHERS
COKE CRUSHERS
CAR HAULS
CAR DUMPERS
COAL BRIDGES
ORE BRIDGES
LOADING TOWERS
UNLOADING TOWERS
SELF-UNLOADING BOATS

ROBINS CONVEYING BELT COMPANY
• PASSAIC, NEW JERSEY AND PRINCIPAL CITIES •

REBELLION AGAINST THE GOVERNMENT

CALVIN COOLIDGE won his nomination as Vice-President of the United States because of his statement on the Boston police strike, to the effect that no public servant may strike against his government. Most of us remember that statement heralded across the continent in newspaper headlines. Over night it made the obscure Governor of a small New England state a national hero. If some of our present politicians remember that, and are half as shrewd as Calvin Coolidge was, they may profit by his example.

This incident is brought to mind by the taking over of the Kearney, N. J., shipyard of the Federal Shipbuilding and Dry Dock Co. on August 23, by the U. S. Navy Department. We assume that every reader knows the history of this; knows the only issue was that involving "union membership maintenance," or in so many words "closed shop." The company management preferred to surrender the plant to the government rather than accept a closed-shop contract, which they and a great many other people, employees as well as employers, consider un-American. The President himself made the decision to have the navy take over. Only one prominent man raised his voice in protest, the former Secretary of the Navy, now the Governor of New Jersey, Charles Edison.

Governor Edison said that we were taking a long step toward totalitarianism—the abolition of private enterprise, and the abolition of independent labor unions. He alone, among New Dealers, appears to realize that labor union leaders are putting their necks in nooses that will eventually hang them and make Nazi-like slaves of workers. For, while the President has not announced the status of the workers at the Kearney shipyard, hitherto the Federal Government has done no collective bargaining with labor unions, which recognized the "right" to strike. It can not do so and remain a government. This point is admirably expressed in a ruling on state force-account highway work, by the Attorney General of Michigan.

This attorney general ruled: "In the industrial field, collective bargaining has been adopted as a method of solving private labor problems. However, because of fundamental concepts and principles of government, it is obvious that collective bargaining cannot apply to public employment and public labor which involve expenditure of public funds. The moment any agency of government recognizes any individual or group of individuals, be it capital or labor, as superior to any other group or individual, government for all on an equal basis ceases and we would have a government, not by the people, but by organized minorities which would only engender bitterness and result in chaos, and defeat the very purpose of government. A strike of public employees called for the purpose of coercing public officials into exercising discretionary powers vested in them by law in a manner satisfactory to the strikers is in reality a form of rebellion against the government."

There is a deplorable tendency to shirk our individual and collective responsibilities as citizens of a republic. Labor union leaders who believe in our form of government and wish to preserve it, if they are intelligent enough to understand what is actually taking place, certainly are not anxious to see *more* government in industry. Quite possibly some people are so bitter that they are willing to risk anything to embarrass the President or the New Deal. That is dangerous business, dangerous to the common welfare.

Problems of wage increases, union recognition, etc., can be solved amicably with government coöperation. How this is done in Australia is told by one of our industry producers in Australia on the following two pages. He was a recent visitor to the United States (four years ago) and was struck, even then, with our floundering in meeting this so-called labor problem. Also, we are reminded of the visit of another Australian friend several years back, who told us how a Labor Government there, long dreaded by employers, actually worked out quite satisfactorily. With political power came labor's sense of social responsibility.

The President of the United States in his Labor Day address emphasized the close relationship of the system of private enterprise to free labor; but he dwelt on dangers from without, which we all now recognize and are preparing to meet; he said little about facing the dangers from within, that arise from inflated wages, unjustified strikes for closed shop, etc. There are people in his administration and in union labor organizations who do not wish for private enterprise to survive. Probably the great majority of Americans, union labor the same as all the rest, do want to save private enterprise in the United States.

Nathan C. Rockwood

NEWS AND COMMENT

Industrial Arbitration

SINCE 1900 there has been evolved in Australia a compulsory system of Industrial Arbitration, which has proven a most satisfactory method of dealing with labor disputes. Under this system, strikes do certainly still occur, but various Acts of Parliament having provided the machinery for arbitration, assures both the worker and the employer fair treatment and so keeps the more drastic procedures of strikes and lock-outs to a minimum.

The Arbitration Court is empowered to "settle, and determine all industrial disputes irrespective of whether the parties to any dispute are registered industrial unions or not, if the dispute has caused a cessation of work."

The workers through their organization represent practically the whole of the industries operating in the State. The fact that labor is so well organized, making collective bargaining an absolute necessity, has compelled employers to organize also.

The West Australian Employers' Federation consists of a group of highly trained business men capable of dealing with any problem relative to employment. The Federation is supported in the same manner as the Chamber of Commerce; that is by voluntary subscription from all firms. Whenever an employer is in doubt as to the interpretation of an award, or whenever a labor dispute arises, it is to the Employers' Federation that he goes for counsel.

From the point of view of private employment as distinct from Governmental activities, it can be safely stated that in Western Australia the Employers' Federation practically represents all the employing interests operating in this State. Virtually the Federation is a trade union. Its objective is the preservation of the rights of the employers.

The accompanying chart gives an outline of the procedure adopted whenever a serious labor dispute arises in an industry.

The only difference between an Award and an Agreement is that an award is the judgment of the Court on a reference submitted to it, whereas an agreement is reached without the assistance of the Court, but has the same force as an Award when registered.

Every Award has a Common Rule effect in the industry to which it applies. That is to say that the Awards of the State Court apply to *every* person engaged in the industry to which the Award relates. This ensures fair competition in the industry as far as wages are concerned.

CHART SHOWING PROCEDURE ADOPTED TO SETTLE LABOR DISPUTES IN AN INDUSTRY

Employes are members of a Union due to Government policy of preference to Unionism. If any employes are not members, the award governing an industry still applies to such non-members and no employe can contract out of an award.

Employers are organized through their individual associations which in turn are affiliated with the Employers' Federation which therefore represents all employing interests in the State.

Fifteen employes of an industry can form a Union and be registered in the Arbitration Court under the Act.

Where an award is in existence and grievances subsequent to the Award arise same are submitted to the Union.

The Union compiles conditions governing employment and rates of pay and same is submitted to employers.

The Union considers the grievances and on proper authority from members thereof the Union executive compiles claim and seeks new award or amendments to the existing one.

Claims served on Employers.

Employers advise Federation.

Federation convenes meeting of all employers affected to discuss claims and to appoint Management Committee with full power to act on behalf of all employers.

The Union acting through its executive follows up the claims by request for round-table conference with object of settling dispute or agreeing to terms of reference to be submitted to the Court.

Round-table conference is held—all conciliatory offers made by employers are made without prejudice.

If agreement is reached same is registered in Court and has the force of an Award.

If no agreement is reached the issues invariably are reduced to a minimum for reference to the Court.

Both parties prepare their respective cases and appoint their advocates. By the Arbitration Act legal practitioners are precluded except in respect to penal sections of the Act.

Every award has a common rule effect in the industry to which it applies therefore when a Union makes a Reference to the Court it endeavors to cite all employers in that Industry as Respondents.

The reference comes before the Court which consists of a President (a Supreme Court Judge) and two lay members, one appointed by employers and the other by the Union. As strikes are illegal the Court has always insisted that strikers return to work before hearing their claims.

The Court hears the dispute according to "equity good conscience and its merits" and the rules of evidence are waived.

The decision of the Court is that of the majority of the members, but if opinion is equally divided the decision of the President is the decision of the Court.

The decision takes the form of minutes which are recorded and open for inspection. The parties may approach the Court in respect to matters contained in the minutes and the Court has absolute discretion to amend or vary such minutes before actually issued as an Award of the Court.

The Award is made within a month from the commencement of the hearing and is for a period not exceeding three years.

The relationship existing between the Trades Hall and the Federation is usually very harmonious, except on matters of general principle, such as the reduction of working hours and increases in margins, which are usually left to the decision of the President of the Court.

An early difficulty which arose with this system of Arbitration and Awards was to find a satisfactory and common basis for the fixation of wages. A datum peg as it were. This has been overcome by giving to some competent authority the power to ascertain by evidence and scientific inquiry what the cost of the essential commodities (in view of the domestic obligations of the average worker) were, and on such information to declare a Basic Wage for all workers. An average worker is taken to be a married man with two children. The Basic Wage of a female worker is ascertained by the same method. The amount is less than a male worker because a woman is considered to have no dependents.

In this State, the power to fix the Basic Wage after a proper inquiry, was conferred on the Court of Arbitration by an Act which reads:

(1) "Before the fourteenth day of June in every year the Court of its own motion, shall determine and declare:

(*a*) "a basic wage to be paid to male and female workers, and

(*b*) "wherever and whenever necessary, differential basic rates to be paid in special or defined areas of the State.

(2) "The expression "basic wage" means a sum sufficient to enable the average worker to whom it applies to live in reasonable comfort having regard to any domestic obligation to which such average worker would be ordinarily subject."

In addition the Court makes quarterly adjustments by applying any variations in the cost of living as indicated by Price Index numbers and other information supplied to the Court by the Government Statistician.

Whenever the Basic Wage is adjusted and amended by the Court, the Basic Wage prescribed in every Award and Industrial Agreement is automatically increased or decreased.

In framing its Awards the Court has to distinguish separately the component parts of the total Wage prescribable. That is to say, a distinction must be made between the Basic Wage and the Secondary Wage or "Margin," for each class of worker specified in the Award. By this method the "Margin" remains *constant* during the currency of the Award, whereas the Basic Wage may fluctuate considerably from time to time and the total wage is correspondingly varied.

As an instance of this, the Basic Wage before September, 1939, was £ 4. 2. 2, but because of the steady increase in the cost of living during the War, has been increased every quarterly adjustment, until now it stands at £4. 8. 0.

The "Margins" are fixed on the evidence tendered to the Court on various factors, such as the degree of skill required to be possessed by the particular worker, the cost of his tools of trade, the arduous nature of the work, or the intermittency of employment peculiar to the trade or occupation.

Most of these factors have to be taken into consideration in the Building Trade, as the details of the Carpenters' Award indicates.

Method of Determining Weekly Wage for Carpenter.

	£.	S.	D.
Margins			
For skill	1.	8.	6
Tool allowance		1.	0
Holiday pay allowance..		4.	3
Lost time allowance....		6.	0
Total Margin	1.	19.	9
Basic Wage	4.	8.	0
Total Wage (Australian Currency) ..	£6.	7.	9

This amount is equivalent, at normal rates of exchange, to approximately 26 dollars for a working week of 44 hours.

Possibly a system of this nature is what America is seeking to help overcome her industrial troubles.

The Author

FOUR YEARS AGO the author, John Banfield, a large Australian gypsum producer, visited the United States, and it was the privilege and pleasure of ROCK PRODUCTS to help entertain him in Chicago. We have recently received a welcome letter from him which reads in part as follows:

"On my travels through your country I found Americans particularly interested in the Australian system of Arbitration, and recently when two Americans arrived in Perth on separate missions to study this subject, I decided to compile 'The West Australian System of Industrial Arbitration.'

"Knowing that your readers consist mainly of industrial men who can afford little time for delving into involved articles, I have set out the system in chart form and with a short explanatory article. I trust you will find the result of my efforts of sufficient interest for publication and would happily supply further information if desired."

THE EDITOR.

ADVENTURES OF SUPER DAN, THE SUPERMAN

I'M STEPPING OUT IN SOCIETY. TONIGHT I'M HAVING DINNER WITH THE UPPER SET!
THE STEAK MAY BE TOUGH BETTER TAKE THE LOWER SET TOO

Marquette's Des Moines Plant Making Rapid Progress

SINCE the Marquette Cement Manufacturing Co., Chicago, Ill., took over the plant and properties of the Hawkeye Portland Cement Co., at Des Moines, Iowa, about a year ago, the entire plant and quarry have been in a process of modernization. The illustrations on the opposite page give some idea as to the extent of this program.

Quarry improvements include the installation of 50-ton raw material haulage cars between quarry and plant, new machinery installed in the crusher department, a Diesel-electric locomotive for yard switching was placed in service, and a new spray pond added to the power department. A tractor-mounted, Diesel driven drilling machine, illustrated in the August, 1941, issue of ROCK PRODUCTS, is equipped with two 4-ft. derrick drills of the wagon type and two compressors. To release the quarry locomotive for other purposes during carloading operations, a special Diesel-driven, tractor-mounted, car puller with attached drum and cable machinery was built. The locomotive is a 65-ton G. E. Diesel-electric type.

The crusher department located at the cement plant remains practically the same. However, the secondary crushers, consisting of a combination of two hammer mills, a classifying screen, and two pan feeders, were replaced by one Gruendler type XXB hammer mill driven by a 300-hp. Allis-Chalmers synchronous motor. A pan feeder of the same width as the Gruendler mill feed opening was added. Minus ¾-in. material is now being produced at the rate of 250 tons per hour.

All Structures of Concrete

Three monolithic concrete buildings now being erected parallel to the present kiln structure will house all the new raw material storage facilities and equipment, the raw grinding machinery, slurry system, kiln, clinker cooler, and coal preparation machinery. The location of these buildings and the equipment housed in them may be seen in the accompanying plan drawing.

Five raw material feed bins, arranged in a row, served by the crane, and fitted with individual constant weight Hardinge feeders, are located at the raw mill side of the storage. These feeders are electrically interlocked. The preliminary mix is started at this point with any combination of limestone, shale, or admixtures desired. Clinker and gypsum feed bins with similar Hardinge feeders are located between the clinker and gypsum storages, and discharge on a conveyor passing to the clinker grinding department.

The preliminary mix passes by a combination of conveyors and elevators to two 50-ton capacity preliminary mill feed bins. Poidometer feeders and constant pressure water meters will regulate the quantities and ratio of raw material and water entering the preliminary grinding units.

First stage in reduction will be accomplished by two Allis-Chalmers preliminators driven by 250-hp., 2200-volt synchronous motors. These mills are closed in circuit with totally enclosed Utah vibrating screens. Four-inch centrifugal pumps deliver the mill product to the screens, oversizes returning to the mill inlets, and fines are sent to an agitated surge tank located between the preliminary and secondary grinding units. Four Smidth type E-18 tube mills now in service will be transferred to the new location to comprise the secondary stage of grinding.

Proportioning Methods

Slurry storage and mix control system will consist of eight 25 ft. 6 in. diameter and four 15-ft. diameter concrete tanks, 39 ft. high, all equipped with Minogue agitators. In addition to air and mechanical agitation, large volume circulating pumps will be provided for homogenizing and transfer purposes.

Four 15-ft. tanks will be used for high lime, high iron, high alumina, and high silica slurries, and will supply whatever corrective mediums may be necessary for final mix correction. These tanks will also be of service when producing special cements. The eight 25 ft. 6 in. tanks will have sufficient capacity for four days of kiln operations. Tanks will be used progressively in pairs of two.

In controlling the composition of the mix with the proportioning and corrective methods provided, periodic analyses of the raw materials, as received, will be made. From the analytical data thus secured, the ratios of the various components will be fixed at the constant weight feeders. Slurry will then be prepared in daily batches and thoroughly homogenized by the system of agitation and circulation provided. After sampling, the slurry will be held 24 hours for complete analysis, which will determine what corrections, if any, will be required. The special slurries, previously prepared and stored in the admixture tanks, will then be added for final correction. Then after a final check analysis, the slurry will be released for use.

The new kiln building will house a 11½- x 475-ft. long Allis-Chalmers kiln which will be equipped with 19,600 lineal feet of ⅝-in. chain extending over 105 ft. of shell in the drying zone. Clinker will discharge into an Allis-Chalmers air quenching type cooler with a grate length of 100 ft. A Multiclone system of dust collection will be installed on the cooler waste air stack. Kiln fuel will be prepared by a No. E-56 Babcock & Wilcox mill, with mill and fan separately driven.

Clinker grinding department will continue to operate as it is. Smidth Kominuters with outside screen classification and Smidth tube mills comprise the grinding machinery.

No provision has been made for waste heat recovery due to the low temperature of the exit gases, but to compensate for this condition a 450 lb. pressure, 55,000 lb. of steam per hour Babcock & Wilcox boiler will be installed in the power department. The boiler will be fired with pulverized coal, prepared by two Babcock & Wilcox mills.

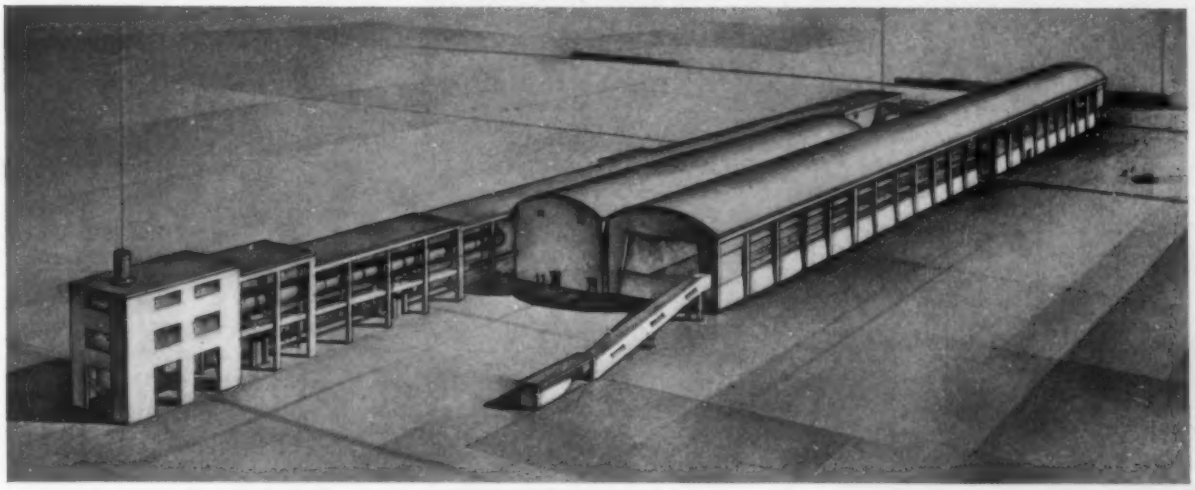
Priorities for Latin American Highways

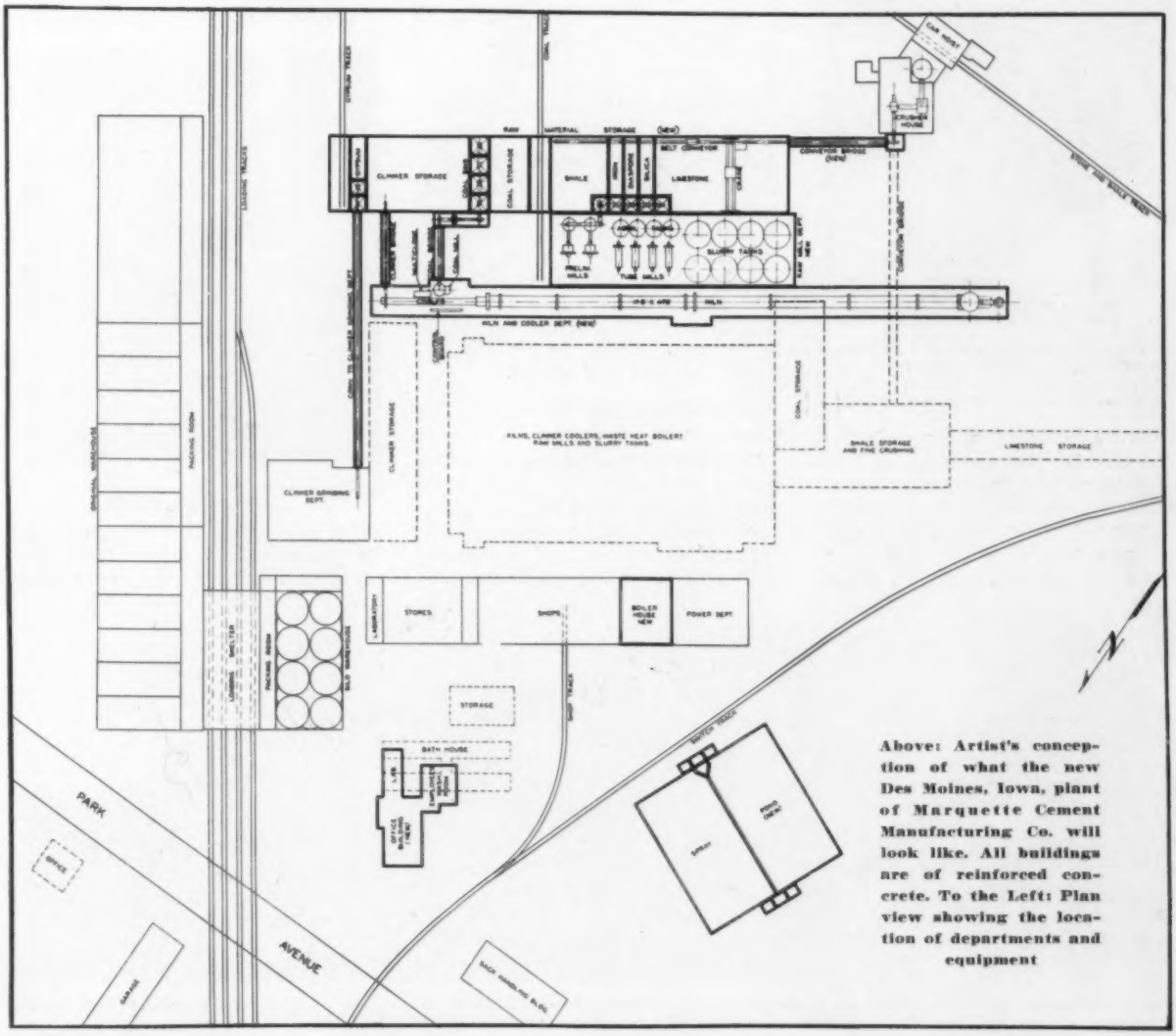
THE OPM PRIORITIES DIVISION in Washington, D. C., has announced that priorities will be given for materials and machinery to be used in constructing strategic highways in Latin American countries. An A1B rating has been given for construction of the trans-isthmian and the Chorrera-Rio Hato highways in Panama.

New Officials

LONE STAR CEMENT CORPORATION, New York, N. Y., has announced that J. R. Dillon, chairman of the executive committee, has been elected chairman of the board; R. A. Hummel, formerly executive vice-president, was named president and general manager to succeed C. L. Hogan, deceased, and R. J. Coke, a director, has been elected a vice-president.

MARQUETTE BUILDS NEW PLANT





Above: Artist's conception of what the new Des Moines, Iowa, plant of Marquette Cement Manufacturing Co. will look like. All buildings are of reinforced concrete. To the Left: Plan view showing the location of departments and equipment

Hints and Helps

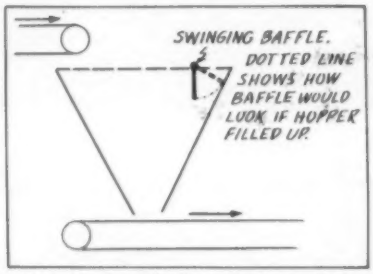
★ FOR SUPERINTENDENTS ★

Safety Device on Conveyors

COLUMBIA CONSTRUCTION CO., INC., supplying the aggregates for the Shasta dam at Redding, Calif., de-

Swinging steel baffle mounted near upper edge of conveyor transfer hopper actuates switch to stop conveyor when big cobble stone obstructs opening

livers washed sand and gravel over the 10-mile long conveyor system, comprising 26 separate conveyor units. At each transfer point the aggregate falls to a steel hopper with an open bottom which acts as a feeder for the next conveyor. When cobbles (8-in. diameter gravel) are transported it is possible for the large gravel to arch over and stall the works. To prevent serious operating difficulties, each hopper is provided with a swinging steel baffle mounted near the outer and upper edge. If this baffle is swung on its axis it actuates a mercoid switch mounted outside the assembly and this switch immediately



Showing how baffle operates switch

functions to stop the entire conveyor system up to that point. The field crew who look after the lubrication and maintenance of the system then rush to the spot and correct the trouble with a minimum of delay.

But for these simple switches, the high speed (up to 660 f.p.m.) of these conveyors would build up a small mountain of cobbles before the assembly jammed and stalled.

Portability for Pit Conveyor Systems

SAND AND GRAVEL is delivered to the Shasta dam aggregates plant from the pit over a series of belt conveyors. The 10-mile long conveyor system that serves the dam has been previously described. Repairs on the long conveyor have been practically negligible, but in the pit, where large rocks must be handled, the system takes a beating. As the pit becomes worked out the conveyor systems must be relocated and for some shift-overs it is desirable to take off the belts and shift the items over singly. Portability of construction members therefore becomes necessary.

One stunt is to use a portable "winder" for rolling up belts that are to be removed, or changed. This unit can be power operated. The new belts are also mounted on portable frames so that a "cat" can move the new belting to place of use. Likewise the transformers for the 200-hp. motors are mounted on skids so that they too can be moved to new locations.

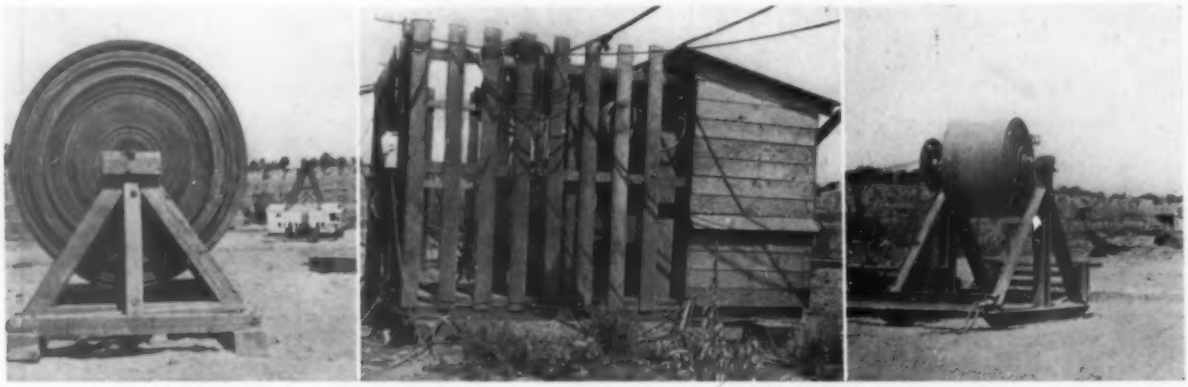
Concrete Pipe Porosity Tester

IN THE UP-STREAM FACE of most dams built under the supervision of the Bureau of Reclamation, a porous drain tile of concrete is usually embedded in the concrete. All seepage in

Method of testing concrete pipe for porosity

the concrete mass tends to drain out through these channels.

The specifications require a tile



Left: Pit conveyor belt carried to the place of use on skids. Center: Portable transformer supplies power to conveyor system. Right: Winding device for rolling up belts

that will drain rapidly and at a rate of not less than 7 gal. of water per minute per square foot of vertical surface. Concrete for testing is made into cylinders 4 in. in diameter and 12 in. long. The amount of water that passes vertically through this test piece, and under 4 in. of water "head" must be equivalent to 7 gal. per square foot per minute.

Tile made at the Jourdan Concrete Pipe Co.'s plant near Fresno, Calif., are tested in a home made device developed by the testing engineer located at that tile plant. The test piece is placed in a metal jacket the sides of which extend upwards exactly 4-in.

Water from a hose is allowed to run in the top of this device and what water seeps through is caught in a container and weighed.

The illustration shows a test piece; the water coming out of chute in foreground is that water which percolated through the tile. To maintain a constant head of 4-in. the excess water drains off from another spout shown at right.

Sampler for Aggregates

SAMPLING AND TESTING at the Friant dam sand and gravel plant is done by the engineers of the Bureau of Reclamation. Nothing is left to chance. On all the belt conveyors carrying aggregates into the plant, and on belts carrying the different washed material to their respective stockpiles are devices for removing and catching the samples.

One illustration shows the scraper designed with a curve to fit the belt. This scraper is on incoming material direct from the pit. It gives an excellent view of how the samples are taken.

The second picture shows the pocket with a quadrant gate which catches the sample after it has been scraped from the belt. The second picture was taken on one of the gravel belts serving the stockpiles.

Cable Towers

AT THE REDDING, CALIF., PLANT of Columbia Construction Co., supplying the aggregate for the Shasta dam, an electric Bucyrus-Monighan walking dragline loads the pit-run material to pendulum field conveyors that are served by a suitable hopper and feeder. The belts travel at a high rate of speed and at loading points are pneumatically cushioned to take the rap of pieces of gravel that weigh almost a ton.

Helpful Ideas from the Central Valley

ILLUSTRATIONS and descriptions of interesting methods of doing a more efficient job which appear, herewith, under Hints and Helps department were gleaned from observations made by Walter B. Lenhart in his trip through the Central Valley area of California.

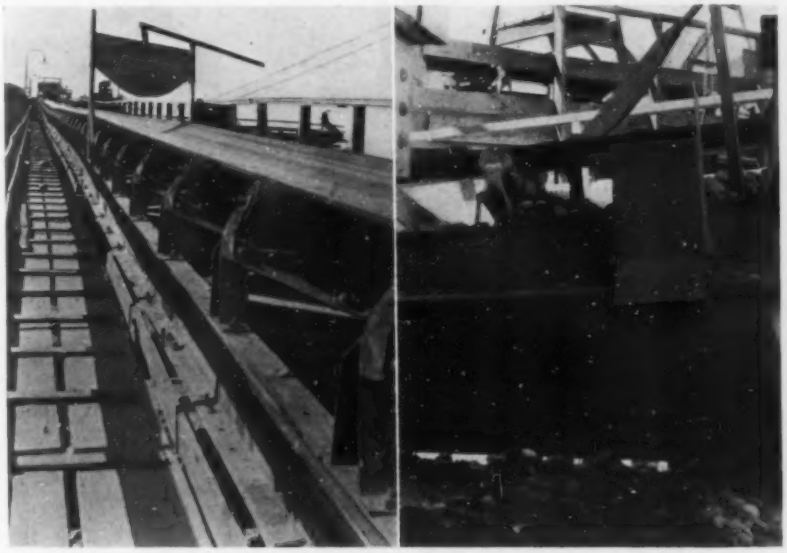
For servicing the various pieces of equipment it is necessary to have roads through and around various parts of the pit. As often is the case, the electric cable serving the dragline must cross these roads. To prevent trucks from damaging the cables, small, portable, steel towers are used to carry the lead wires over and above these roads. A ladder, also of welded construction, has its rungs welded to one of the corner legs.

Portable, welded steel tower which carries cable of electrically operated walking dragline above road

Bin Gate Controls

PACIFIC COAST AGGREGATES, INC., Fair Oaks, Calif., some 16 miles east of Sacramento, stores washed sand and gravel in bins over a loading belt. Crushed stone in several sizes are also above this belt. The belt passes midway between two parallel rows of bins. Any desired material, or mixtures of material can be sent to the belt by means of a series of hand levers, each controlling a gate. The gates are of the horizontal moving type. Each gate connects with a lever by means of a ⅜-in. flexible steel cable so that the operator can regulate his blends without leaving the loading belt.

Convenient system of lever-operated bin gate controls



Left: Scraper used in taking sample from belt carrying sand and gravel. Right: Pocket which receives sample

Design Crushed Stone

By E. LEE HEIDENREICH, JR.*

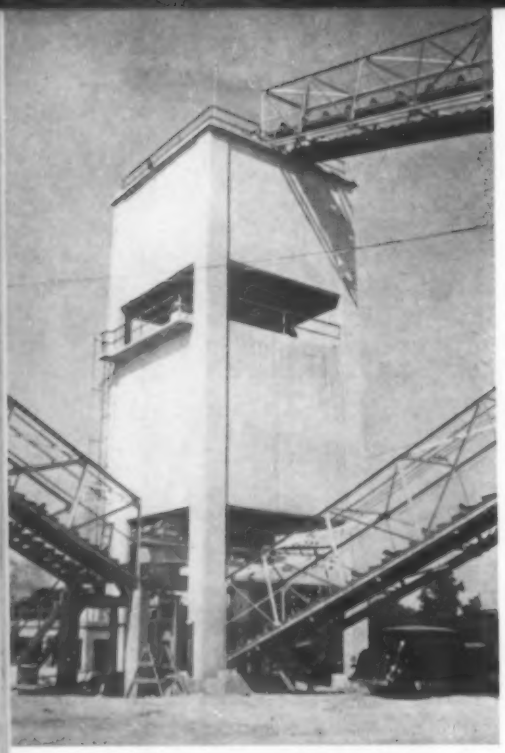


Fig. 1: No. 2 building which receives primary jaw crusher product for reduction in 20-in. secondary crusher

TWO YEARS AGO, George D. Lott, president of the Palmetto Quarries Co., Columbia, S. C., had almost reached the quarrying limits on his plant property. Adjacent quarry property had been unobtainable up to that time. Mr. Lott debated the future with his two sons, George, Jr., and Hamilton, both having recently graduated from The Citadel with degrees in civil engineering. Just then the adjacent property became available and they decided to purchase it and to build a new plant for the future.

The old plant had been built in 1920 and rebuilt with increased capacity in 1931 when the present 48- x 60-in. Allis - Chalmers jaw crusher was installed, and the operation changed from hand loading to power loading by the installation of a 50 B Bucyrus-Erie electric shovel.

As now operated the quarry is an open pit type which is approximately 200 ft. deep. Stone is loaded by the 50 B shovel into skips on Mack AC trucks, each skip holding about 4½ tons of stone. The skips are then hoisted up to the plant which is located on the level ground at the surface. A 15-ton cableway and also a 10-ton guy derrick are used for hoisting the skips which are dumped into the 48- x 60-in. primary crusher. Hoisting cables have to be replaced frequently, the 10-ton derrick requiring 1000 ft. of ¾ in. cable each six weeks, or an average of 15,000 tons per cable. The cableway requires 3200 ft. of ¾ in. cable each five months or an average of 52,500 tons per cable. The life of the derrick cable is shorter than the cableway due to the drum being 15 in. diameter and sheaves 14 in., whereas the cableway is 50 in. diameter and the sheaves 21 in. The plant produces 130 tons per hour as an average and a little over 200,000 tons per year.

Fig. 2, below: No. 3 building contains a 5- x 12-ft. two-deck, vibrating screen. Here plus 2-in. is sent to a bin and is recrushed by a 4-ft. cone crusher, the minus 2-in. plus 1¼-in. going to a second bin or is recrushed in a 3-ft. cone

The new plant, now practically completed, is a radical change from the old. It is designed for an average capacity of 175 tons per hour and will handle efficiently 200 tons per hour maximum. Provision has been made throughout for doubling the capacity by the installation of heavier belts (wider belts are not necessary) and additional screens and crushers. No changes are required in plant structures or conveyor galleries in order to double the capacity and yet the additional cost of providing for future requirements is less than ten percent of the cost of the plant structures alone.

New Plant of Unusual Design

In the new plant all hoisting is eliminated. The primary crusher is the 48- x 60-in. Allis-Chalmers jaw crusher which is being installed in a pit in the quarry floor. Easton 6-cu. yd. self-dumping side dump bodies on the present Mack trucks will be used in hauling from the 50 B shovel to the primary crusher. The jaw crusher set at 8 in., discharges onto a stationary rail grizzly, the throughs going into a surge box and onto a 42 in. conveyor belt (A); the oversize also going through a surge bin onto this same belt, the fines going onto the belt first so as to cushion the load. This surge bin holds a full truck load so that if the conveyor should for any reason stop, the jaw crusher can clear itself of any load that it may have. The 42 in. conveyor operates at 200 f.p.m., and elevates the jaw crusher product to No. 2 building, Fig. 1, and

Fig. 3: No. 4 building or screen house which in reality is a series of five structures, each of which has a single deck vibrating screen, except station No. 2 which has a double deck screen. Below all of the stations is a tunnel conveyor reclaiming from stock piles surrounding each station

* Consulting engineer, Palmetto Quarries Co., Columbia, S. C.

Plant For Future

Palmetto Quarries Co. builds new crushed stone plant with permanent concrete structures. Screen house comprises series of "station" buildings, each with individual stockpiles

discharges to a rail grizzly, the throughs going through a large surge bin by-passing the secondary crusher, the oversize going through a surge bin to the 20-in. Superior-McCully secondary crusher. This crusher discharges into a surge bin which feeds a 24-in. conveyor belt (B) that starts the stone on its way to the surface. The secondary crusher is also located on the quarry floor.

The stone is then elevated by a series of conveyors B, C, D, and E to a surge bin over the scalping screen, No. 3 building, Fig. 2. This screen is a 5- x 12-ft. Robins two-deck Gyrex screen driven by a 15-hp. motor. Here the plus 2-in. is sent to a bin and is recrushed by a 4-ft. Symons cone crusher, the minus 2-in. and plus 1¼-in. going to either a second bin where it is recrushed by a 3-ft. Symons fine bowl crusher, or into the same bin as the minus 1¼-in., which is the surge bin over a feeder leading to the screen house. The 3 and 4-ft. cone crushers are set off the ground with oil tanks below the operating floor, and discharge into a surge box which feeds a 24-in. conveyor (F) that in turn discharges to the conveyor (E) which empties onto the surge bin over the scalping screen, thus forming a closed circuit.

From No. 3 building the stone is fed to a 24-in. conveyor by a feeder conveyor thus regulating the amount of stone and also sending a uniform flow of material to the screen house,

Fig. 4: Screen house station No. 7, foreground, is a silo for the storage of minus ⅛-in. stone. Silo doors open from the pressure of material from inside and discharges to an open screenings pile

Fig. 5: No. 5 building which is known as the transfer house. Material from the tunnel conveyor is elevated to the top of this structure where a cataract washer cleans the aggregates. From the washer it is discharged to either of two rail connections or to six truck bins

Airplane view of quarry showing proximity of city; present stockpiles shown to the right; quarry in left, center, with pit for new location of primary crusher in center of present quarry. New plant under construction to the right; future quarry extension in upper center; and future river transportation to Congaree river at lower right

General view of new plant, showing screen house, scalping house and truck bins

known as No. 4 building, Fig. 3. This is a series of buildings or "stations," each having a single deck screen excepting station No. 2 which has a double deck screen. Underneath all of the stations there is constructed one continuous tunnel with a conveyor for reclaiming the stone from the storage piles of sized stone around each station.

Partition walls are being built between each station at the ground level so as to keep each size segregated. The stone comes from the feeder in No. 3 building to a 24-in. conveyor up to station No. 2 of the screen house. Here there is located a two-deck Robins Gyrex screen which can make plus 2-in. material for storage inside of silo station No. 1 and minus 2-in. plus 1¼ for storage around station No. 2. The minus 1¼-in. goes to a 24-in. belt and is carried to a Robins Vibrex screen with ¾-in. cloth on station No. 3. Here the minus 1¼-in. and plus ¾-in. material is removed and stored around station No. 3 while the minus ¾-in. material goes onto another 24-in. belt and is carried to a Vibrex screen at station No. 4.

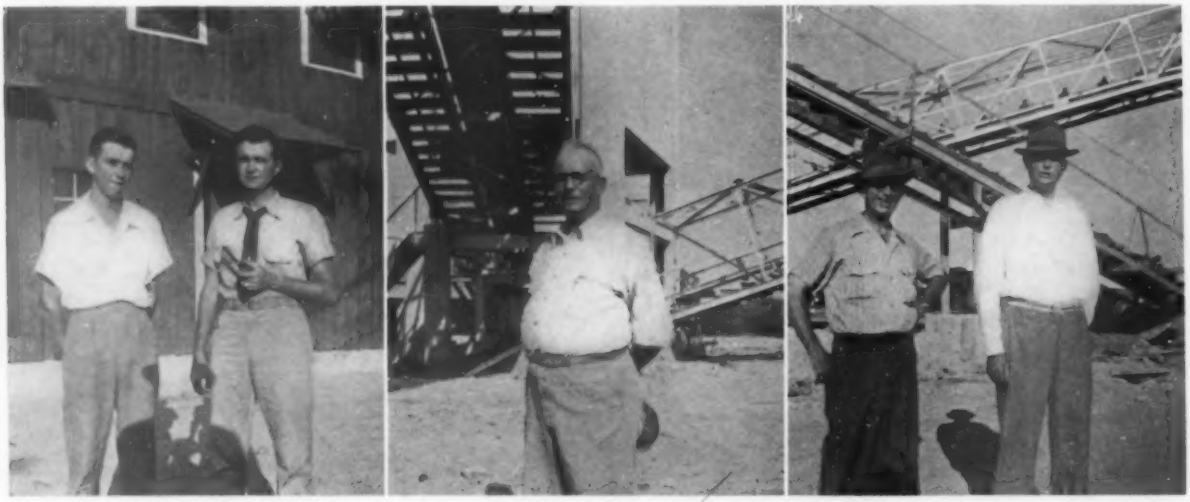
Here minus ¾-in. and plus ½-in. material is removed and stored. The minus ½-in. goes onto an 18-in. conveyor to station No. 5 where the minus ½-in. and plus ⅜-in. material is removed and stored, and the minus ⅜-in. material goes onto an 18-in. conveyor to station No. 6 where two Vibrex screens remove and store the minus ⅜-in. and plus ⅛-in. sizes. The minus ⅛-in. size goes to a 14-in. conveyor and discharges either into a truck bin by a stationary tripper, or continues on the same belt to station No. 7 which is a silo with doors, Fig. 4, which open from the pressure of the material from the inside, and discharge onto an open screenings pile.

Reclaiming Tunnel Conveyor Permits Large Storage

Provision has been made for storing by gravity 4000 tons of each size of material, while the space available will allow for the storage of 50,000 tons of screenings and 10,000 tons of each of the other sizes. In loading out, 85 percent of the gravity storage is "live" storage, due to the reclaiming tunnel being set 16 ft. below the grade level with the ground graded and sloped to the draw-off chutes in the tunnel roofs.

In loading out, the chutes can be set so as to load out any mixture desired, to meet any specifications now written or may be written in the future. The loading out facilities, with a capacity of 450 tons per hour, consists of a 30-in. tunnel conveyor which discharges onto a second conveyor running under building No. 5, Fig. 5, on which the material is elevated to the top of a cataract washer. Here 1200 g.p.m. of water are sprayed on the stone as it passes over a series of baffles and stationary screen plates until it is finally discharged into cars on the Atlantic Coast Line Railroad or by a 30-in. conveyor to the Seaboard Railroad, or by a 30-in. conveyor up to any one of the six truck bins having a capacity of 50 tons each. This same conveyor can also discharge onto conveyor "E" going to the scalping house, so that if any stone is left on the loading conveyors, or it is desired to empty out the truck bins, this material can all be returned to storage by way of the screen house, (No. 4 building). In a like manner, material can be sent from any or several of the storage piles to the cone crushers for recrushing and return to the screen house.

All crushers have V-belt drives, excepting one cone crusher which is direct driven. All conveyors where the horsepower is ten or more, have Link-Belt positive drives consisting of totally enclosed roller chain reduction to Link-Belt reducers direct-coupled to G. E. motors on a structural steel reducer-motor base. All conveyors less than 10 hp. are driven by Allis-Chalmers motors on American Pulley tension bases and American Pulley V-belt drives to American Pulley re-



Officials of Palmetto Quarries Co. Left to right: Hamilton Lott, chief engineer, left, and George D. Lott, Jr., vice-president; center, T. M. (Cap) Hanna, superintendent; Samuel Dreyfus, secretary and sales manager, left, and G. D. Lott, president

ducers mounted directly on the conveyor head shafts. The simplicity and economy of this drive for low power conveyors is a boon to the stone industry, due particularly to the ease of installation.

All screens are either 5- x 12-ft. Robins Gyrex two-deck, or 4- x 10-ft. Robins Vibrex single-deck, and all are driven by V-belt drives.

All conveyor idlers, self aligning troughing idlers, and self aligning return idlers are Robins roller-bearing, single-shot lubrication idlers. All head, tail, snub, and drive pulleys are of cast iron, mounted on cold rolled steel shafts with extra heavy plain bearing pillow blocks, all furnished by Robins Conveying Belt Co. All incline conveyors have a slope of 18 deg., and are equipped with silent pawl holdbacks made by Robins. All of the long conveyors are equipped with gravity type takeups, the short conveyors being equipped with protected screw type takeups, furnished by Robins. All conveyor belting for the entire plant was made by the Boston Woven Hose & Rubber Co.

Concrete structures were designed for slip-form type construction, which the writer has found is easily adaptable to crushing plants and is more permanent and more flexible than structural steel; also more economical in first cost. The Rust Engineering Co., Pittsburgh, Penn., and Birmingham, Ala., was awarded the concrete contract, commencing work January 20, 1941, and completing the job, August 6, 1941. All structural steel and chutes were detailed, fabricated and erected by the Southern Engineering Co., Charlotte, N. C. Installation of all conduit and wiring is being done by The Jordan Electric Co., Columbia, S. C. The installation of the machinery is being done by the owners.

The writer had direct charge of all engineering, layout, work, detail design, construction and installation of machinery and electric work. Field engineering was done by George D. Lott, Jr., and the structural design and general checking was done by Hamilton Lott.

The chute design and details were made by H. A. Harnden and M. C. Dow of Newburgh, N. Y., and the detail concrete plans and final general plans were made by Brunner and Laws of Chicago. The detail electrical plans were made by G. H. Preacher, Columbia, S. C., all under the writer's supervision. On December 1, 1941, the old plant will be shut down and then the 48- x 60-in. jaw and 20-in. Superior McCully Gyratory crushers will be lowered 200 ft. down to their new locations at the quarry floor, and the present 3 ft. and 4-ft. Symons cone crushers will be moved to their new locations. The new plant will be placed in operation in January, 1942.

With the modern storage facilities and flexibility of operation, the plant will be unexcelled in ability to serve its customers for many years to come.

Officers of the Palmetto Quarries Co. are: George D. Lott, president; George D. Lott, Jr., vice-president; Samuel Dreyfus, secretary and sales manager; Hamilton Lott, chief engineer, and T. M. Hanna, superintendent.

No Magnesite Shortage

THE DOMESTIC MAGNESITE INDUSTRY, created largely by World War I, attained a record production in 1940, according to the Bureau of Mines, United States Department of the Interior. The output exceeded the peak war year of 1917 when the then infant industry was called upon with but little notice to supply virtually the entire magnesite refractory needs of American industry. Crude magnesite produced by domestic mines, including the ore equivalent of synthetic magnesite from sea water bitterns, in 1940 amounted to 333,166 short tons —an increase of 3½ percent over 1917 peak production and more than 76 percent in excess of the tonnage produced in 1929. California, Washington, Nevada, and Texas were the producing states. Dead-burned magnesite domestically produced in 1940 amounted to 140,668 tons. This tonnage was 10,171 tons in excess of the total available supply in 1939 from both imports and domestic production, and almost 1,500 tons greater than the available supply in 1937. The 1940 production of caustic calcined magnesite, likewise, surpassed previous records at slightly more than 16,000 tons.

Magnesite is being utilized in some European countries as a source of magnesium for the light magnesium alloys for airplanes, bomb shells, and other important war-time uses. Domestic magnesite likewise is scheduled in 1941 as raw material for magnesium, which hitherto has been produced in the United States almost exclusively from brines. The chief use of magnesite is in magnesite refractory materials for lining iron and steel and nonferrous metal smelting furnaces, lime and cement kilns, and electric furnaces. Floors made of magnesite cement, the chief outlet for caustic calcined magnesite, do not crack when subjected to vibration, and magnesite lumber is fireproof. About 2,000 tons of magnesite are used each year in the production of magnesium chemicals.

Magnesite occurs in two forms: Crystalline and cryptocrystalline (amorphous). The former type is mined extensively in the state of Washington, in Austria, and Manchukuo. California, Greece, and British India contain deposits of the cryptocrystalline variety. The magnesite found in nature usually contains impurities, some of which are desirable for certain purposes. Up to 7 percent iron oxide is preferred for that to be used in refractories, and iron must be added to ore deficient in the element up to that amount. In caustic calcined magnesite iron is a deleterious material.

Mining and preparation for market are relatively simple operations, involving quarrying or underground mining, crushing, and calcining. Magnesite for refractories is heated to a temperature up to 1,500 deg. C. to drive off all but a fraction of a percent of the carbon dioxide content, and then is known as "dead-burned magnesite." "Caustic magnesite" or "caustic calcined magnesite" for cement or use in rubber is subjected to temperatures ranging from 700 deg. C. to 1,200 deg. C., leaving from 2 to 7 percent of the carbon dioxide contained in the original rock.

Except for hand sorting and rejecting undersize material at certain steps in crushing operations, there has been little or no concentration of magnesite ores, either in this country or abroad. The Bureau of Mines in coöperation with a large producer definitely established the feasibility of floating magnesite ores on a commercial basis. Late in 1940 a concentrating unit was installed in the plant of the Northwest Magnesite Co. Chewelah, Wash., and is now in operation. This application of flotation methods to low-grade magnesite ores will greatly increase the ore reserves in this country. A short description of the process and equipment appeared in ROCK PRODUCTS, July, 1941, p. 87.

Imports provided 34 percent of the available supply of dead-burned magnesite in 1939 but only 22 percent in 1940.

If an emergency arose involving a complete stoppage of imports, it is believed that domestic sources could meet any requirements over a protracted period. No bottlenecks are likely to develop in producing crude material since magnesite mining operations are susceptible of almost immediate expansion. Kiln capacity was increased in California in 1939 and again in 1940, the latter at Newark, where synthetic magnesite is produced from sea-water.

NEWS ABOUT PEOPLE

Rock Products Men in Defense Industries

DEFENSE PLANT CORP., a subsidiary of the R. F. C., has authorized lease agreements with the Odenbach Shipbuilding Corp., Manitou Beach, N. Y., for a shipbuilding plant to cost $870,000, and to the Basalt Rock Co., Inc., Napa, Calif., for shipbuilding equipment to cost $150,000.

JOHN ODENBACH, president of the Odenbach Shipbuilding Corp., is the well-known head of the Dolomite Products Co., Rochester, N. Y., crushed stone and sand and gravel producer. The Basalt Rock Co. is an old hand at barge and shipbuilding for the federal government. A. G. STREBLOW, president of Basalt Rock Co., has the reputation of being about the livest wire in his neck of the woods as a crushed stone, sand and gravel and concrete products producer.

•

FRED BURGGRAF has been appointed assistant director of the Highway Research Board of the National Research Council. Mr. Burggraf has been connected with research relating to highways since 1919. His career has included engagements with the National Bureau of Standards, the Illinois Division of Highways, the Highway Research Board and the Calcium Chloride Association.

•

R. N. MCADAMS, assistant secretary and assistant treasurer of Hercules Powder Company, Wilmington, Del., has been elected secretary of the company, filling the vacancy created by the death of H. F. Smith. William R. Stevens, credit manager, was elected assistant treasurer. George B. Baylis was elected assistant secretary. John B. Lodge, assistant credit manager, was appointed credit manager.

•

R. R. LITEHISER, former secretary of New York State Crushed Stone Association, and now with the U. S. Army, has been advanced to the rank of lieutenant colonel, on duty at the port of embarkation in Brooklyn, N. Y.

PAUL B. REINHOLD, president Reinhold & Co., Inc., Pittsburgh, Penn., is one of a special six-man subcommittee of the Pittsburgh Chamber of Commerce named to study proposed routes for the extension of the Pennsylvania Turnpike from its present western terminus through to the state line. The committee has in mind promoting the Turnpike to a coast-to-coast super highway toll road.

•

VICTOR J. AZBE, consulting engineer and contributing editor to the Lime Forum of ROCK PRODUCTS, has qualified as a member of the Tyee Club of British Columbia with his catch of a 34½ lb. salmon.

Victor J. Azbe, left, proves his prowess as a fisherman. The fish weighed 34½ lb.

•

J. W. HARRINGTON, WPA superintendent on the U. S. Highway 77 repair job, has accepted a position as superintendent of Cage Brothers' new gravel pit at Winchester, Texas.

•

FREDERICK TOD has been elected chairman of the board of the Bessemer Limestone & Cement Co., Youngstown, Ohio, replacing R. C. Steese, who resigned as chairman, but will remain a director.

H. D. BRIGSTOCKE, Thomasville Stone & Lime Co., York, Pa., and B. L. Corson, G. & W. H. Corson, Inc., Plymouth Meeting, Pa., have been elected National Lime Association directors in District 2; and A. B. Miner, National Gypsum Co., Buffalo, N. Y., and Ralph Dickey, The Kelley Island Lime & Transport Co., Cleveland, Ohio, have been elected National Lime Association directors in District 3.

•

IRENE JOYCE BLANK, precocious 12-year-old daughter of Alton J. Blank, vice-president in charge of operations, Cementos Atoyac, S.A., Puebla, Mexico, is author of a second book, entitled "Tales of Adventure," illustrated by four of her young friends ranging in age from 11 to 14. "Tales of Adventure" show a vivid imagination and keen observation. We predict that Joyce will be heard from in later life. We can't resist adding that you ROCK PRODUCTS' readers who want literary daughters might become writers for ROCK PRODUCTS, as Joyce's daddy is!

•

JAMES P. BARNES, Alabama Asphaltic Limestone Company, Birmingham, Ala., has been appointed chairman of a committee by the Associated Industries of Alabama, charged with the study of individual problems in Alabama as a result of the application of priorities by the national government.

•

FRANCIS E. FIELD has resigned as superintendent of the Ashville Mica Co., Biltmore, N. C., to serve as manager, Defense Contract Service, Office of Production Management, U. S. A. His headquarters will be at Charlotte.

•

VERNON KYLE, vice-president of the Atlanta Concrete Pipe Co. and secretary of the Augusta Concrete Pipe Co., both of Atlanta, Ga., is engaged to marry Miss Betty Taylor, daughter of Mr. and Mrs. Robert Jenks Taylor, Jr., of Atlanta. Mr. Kyle was graduated from University of Tennessee with a degree in chemical engineering.

•

J. V. FORBES, supervising engineer of the safety division, Bureau of Mines, Department of the Interior, has been appointed Chief Mine Inspector of the Bureau to supervise activities under the new Federal Coal Mine Inspection Act.

(Obituaries on page 104)

CENTRAL VALLEY PROJECT

1—Central Valley Project—What Is It?

2—Cement and Aggregate Specifications

3—Permanente—Now World's Largest Cement Plant

4—Friant Dam Aggregates Plant

5—Shasta Dam Aggregates Plant

6—Fair Oaks Aggregates Plant

7—Calaveras Supplies 50 percent of the cement for Friant Dam

The Author

WALTER B. LENHART, the author of this series of articles on rock products plants in the Central Valley Project of California, will be remembered by our readers as one of ROCK PRODUCTS associate editors during the stirring days of the late 1920's and early 1930's. We are often asked what became of him; well, here he is, the same "Len" you knew.

He is a mining engineer, a member of the American Institute of Mining Engineers, with many years' experience behind him as a production superintendent. Since leaving ROCK PRODUCTS he has been mining gold and tungsten in California. We persuaded him to take a few weeks out of his mining practice to do a special job for us on the Central Valley Project.

He writes not merely as a reporter or journalist but with that keen appreciation of operating problems and their solution that only a man experienced in those problems can have. It is unfortunate we cannot also reproduce some of his letters because they are even more interesting (and entertaining) if not instructive.

The picture of Mr. and Mrs. Lenhart shown herewith was taken on the site of Kennett—"once a booming smelter town," where they lived when "Len" was assistant superintendent of the smelter.

—THE EDITORS.

HERE'S HOW TO HANDLE IT:
IF IT IS A LONG HAUL!

More and more belt conveyors are being used as a low-cost method for long-distance hauling. And the longer the belt conveyor, the more important the belt idlers! That's the main reason why you'll find Rex roller bearing idlers on the world's longest belt conveyor line—from Redding to Coram, California, at Shasta Dam—and also on other long conveyors in other parts of the country from the West Coast to the Atlantic Seaboard. And, of course, there are other reasons why Rex Idlers are so often the choice. Among these, long life, smooth operation, low maintenance, and easy replacement when necessary, are most often mentioned by Rex customers. For your conveyor, long, medium or short, ask the Rex Man how to handle it.

SHASTA: *nationally famous as the world's longest, this 9-mile conveyor is completely equipped with Rex belt idlers—over 16,000 of them!*

PERMANENTE: *continued transportation of rock from quarry to mill is provided by this 6,000-foot Rex idler-equipped belt conveyor at the $4,000,000 Mountain View plant of the Permanente Corporation.*

REX CONVEYORS

CHAIN BELT COMPANY OF MILWAUKEE

Baldwin-Duckworth Chain Belt Division, Springfield, Massachusetts • Worcester, Massachusetts
Rex Conveying and Engineering Products Division, Milwaukee, Wisconsin

50TH ANNIVERSARY 1891 REX 1941 CHAIN BELT COMPANY

Central Valley Project

What Is It?

Shasta dam behind which will be stored the rushing waters of the river which heretofore has caused damaging floods. Note method of placing concrete and the location of the trucks in the vast man-made canyon below

By WALTER B. LENHART

CENTRAL VALLEY PROJECT is a big job, involving conservation and regulation of the waters of the San Joaquin and Sacramento rivers in central California for six distinct purposes: (1) flood protection, (2) electric power development, (3) irrigation, (4) control of salt encroachments at river's outlet, (5) industrial and domestic water supply sources, and (6) improvement of inland navigation. The estimated cost of the entire project is about $228,000,000.

Embracing an area of 18,000 square miles, the Central Valley area is 500 miles long and about 50 miles wide. This exceptionally fertile and highly developed agricultural region is equivalent to the combined areas of Massachusetts, Connecticut, Rhode Island and half of New Jersey. It contains 10,000,000 acres of irrigable land. The 3,080,000 acres now under irrigation is 16 percent of the total irrigated lands in the United States.

Frank Crowe, general superintendent of construction at Shasta, the dean of the dam builders

Within this area and on its outskirts are many rock products industries. Several of these plants are among the Nation's largest, such as the aggregate plants at Redding and Friant, each producing around 1200 cu. yd. per hour; the cement plant at Permanente, now the world's largest of its kind; the many operations of the Pacific Coast Aggregates, Inc., with their newest addition at Fair Oaks; the U. S. Lime Products plant at Sonora; and such cement plants as Yosemite Portland Cement Co., Pacific Portland Cement Co., Santa Cruz Portland Cement Co., Calaveras Portland Cement Co., Old Mission plant of the Pacific Portland Cement Co., and others. These plants and many others contribute their share of the vast amount of construction materials going into the project. To gather the material for these articles required traveling 3000 miles in the Valley alone and almost four weeks of time.

The headwaters of the Sacramento river is the focal point of the entire project, for here each winter the area experiences possibly the highest rainfall for the United States. During 1940 there was 112-in. of rainfall in the area which includes practically all of the northern part of California and southern Oregon. This huge amount of water swept down the Sacramento river creating floods of disastrous proportions — while the southern part of the state in the Bakersfield area had only 11-in. The primary object of the Central Valley project is to control this flood water.

Huge Shasta dam being built at Kennett, Calif., about 12 miles above Redding on the Sacramento river, is the keystone of the project. This dam, the second largest masonry structure in the world, will create a lake 35 miles long and will contain 4,500,000 acre feet of water. To supply the aggregate for the 6,000,000 cu. yd. of concrete, the Columbia Construction Co., built a large sand and gravel plant at Redding, which was described in ROCK PRODUCTS, October, 1939, p. 36.

A second concrete dam will be built below the Shasta dam at Keswick. This dam will be 800-ft. long and 100-ft. high.

The Shasta concrete dam will be 3500-ft. in overall length, 560-ft. high from lowest point to the roadway on top, and will be the highest overflow type dam in the world, exceeding Grand Coulee by 10-ft. The spillway will be three times the height of Niagara Falls. Its concrete mass exceeds Boulder dam by 2,250,000 cu. yd., and it will require 1,200,000 tons of cement.

The dam eventually will develop 515,000 h.p. and the need for this power has placed the entire project in the division of National Defense. The initial development consists of four generating units.

(Continued on page 46)

Belt conveyor line and tunnel from new sugar rock quarry

Permanente Is Now World's Largest Cement Plant

Two new kilns bring capacity of plant up to 16,000 bbl. per day

WITHIN a very few weeks, The Permanente Corporation's cement plant, near Sunnyvale, California, will be the largest cement plant in the world. About two years ago construction work started on this plant, and this construction work has never stopped. First it was a two-kiln plant, using the largest kilns available. Before these were hardly broken in, a third kiln was installed and now a fourth kiln is turning out cement while one of the first kilns installed is down for repairs. As soon as installation of the new grinding units is completed all four kilns will be in use.

A War Industry

Not only is the cement plant being enlarged at a speed that breaks all records, but a small army of construction men is building a Magnesium Plant adjacent to the cement plant. The constructors at the cement plant are proud of their accomplishments; a new F. L. Smidth & Co. kiln, 11- x 464-ft., with ends enlarged to 12-ft., was installed in 24 days from the date machinery arrived. That is no small accomplishment when one considers that three to six months is the usual time for erecting such a huge unit. New Allis-Chalmers ball mills, 9½- x 10-ft., new F. L. Smidth & Co. finish mills, 9½- x 10-ft. primary and 8- x 36-ft. secondary, Dorr Classifiers, with and without bowls, Cottrell Precipitators, Wilfley pumps—these and many other items are all being installed as one unit, and with speed comparable to that of the kiln installation. When this plant is completed, as now planned, there will be 17 grinding units, all of the largest size obtainable; and the plant will have a capacity of at least 16,000 bbl. of cement per day, making it the largest cement plant in the world.

Cement for the Central Valley area, the Shasta and Friant dams, Madera-Bakersfield and Contra Costa canals, has been classified as a defense necessity mainly because of the power to be generated. The proximity of the metallic magnesium plant is another reason for placing the cement plant on a war basis.

When you approach the new, large and artistically designed office, you are politely intercepted by an armed guard who asks the general nature of your business. He directs you to the proper official. Possibly from that official a preliminary pass can be obtained to the plant. The next step is to be photographed, and some vital personal statistics recorded, before the final permit to the plant is obtained. Armed and uniformed guards are at all gates and others patrol the very large area taken up by the combined operations. Each day one must check into the plant and check out as well. Cameras are strictly forbidden in the plant and any photographs must come from the company's own staff photographer.

Enthusiastic Organization

Many changes have taken place within the plant since ROCK PRODUCTS published a description, December, 1940, issue, and the project is so large with day to day changes being made, that even the operating staff itself has a hard time keeping up with what is going on. Surveyors dot the yard, and it is with difficulty that you can find a place to park your car; and the chances are that when you return to it, your car will have been moved and a "cat" or "bulldozer," or a crew of men, will be working on the foundation piers for something or other. It is very remarkable; this spirit of the men, their desire to get the job done.

This drive behind the organization starts from the top with their president, Henry J. Kaiser. The men at the plant say that the article recently published in the *Saturday Evening Post* was only half of it. They tell of his ship-building project already launching ships before the ship yard was completed. They first started construction of that yard with pile-

Shovel loading 35-ton capacity "buggies" pulled by tractor for transporting materials from the quarry

Looking down at the Permanente Corporation plant as it appears today with four kilns having a capacity of 16,000 bbl. a day

driver crews. As soon as the ways were started, keels were laid for ships; the construction of the ships keeps pace with the construction of the yard; and, according to our information, a ship was launched long before the yard was completed. The same kind of ingenuity seems to pervade the whole organization.

Churn drill rig and crew preparing for a "shot"

Just when the cement plant would be finished, no one could say. Possibly it will be before this is in print, but some expect before the new unit is completed another enlargement program may be under way, for the cement is going out as fast as produced, and the clinker storage facilities are empty. All salesmen have been taken off the road and put at other work; and for some of the cement for the Central Valley Project, and for other major customers, the company has had to go on the open market.

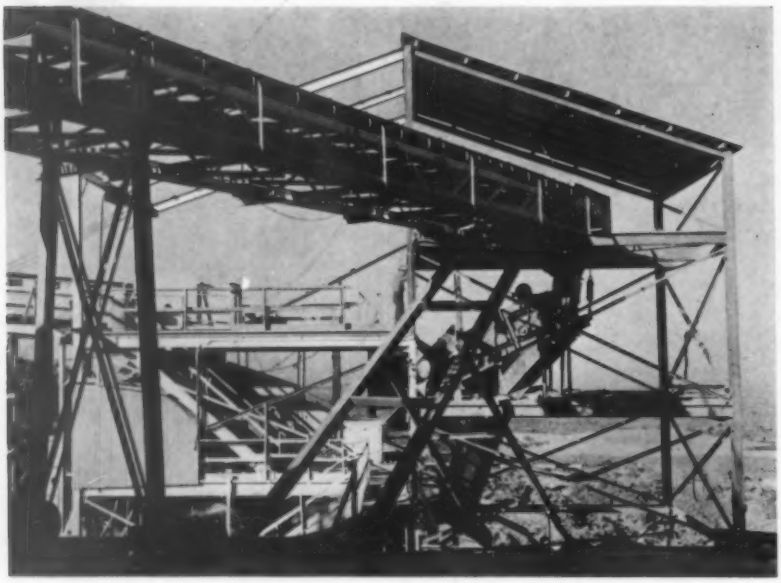
The cement is going to the Shasta dam, to Friant dam, to Panama, Wake Island, Pearl Harbor, and other Pacific island bases. Bulk cement is hauled from Permanente to Redwood City, in specially built trucks and is then loaded into ocean going ships such as the Matson Navigation Company's S/S "WAIMEA", for the ocean trade. (Before the Japanese crisis, Japanese boats also hauled cement in Pacific waters.) Some 30 to 60 box cars loaded with bulk cement leave the plant each day for the Shasta dam alone.

Operating Technique

The specifications for the Shasta cement require a low heat cement, and with the alkali content below 0.6 percent. To meet these specifications requires strict laboratory control. Fortunately, the deposit is favorably constituted for this grade of cement and no selective mining or quarrying is needed.

Many of the new units installed were to increase capacity; others to improve the over-all efficiency such as the installation of a 12-ft. wide Dorr FX classifier in the secondary grinding circuit. Here it was found that if the clay were removed from the cement rock, better settling was experienced in the Dorr thickeners. The minus 3/16-in. or ¼-in. material from the screening plant, operated as a part of the secondary crushing plant, is sent to this classifier. The sand (coarse) portion is returned to the cement rock storage conveyor by a short belt. The overflow (fines) goes to No. 3 thickener —a newly installed 125-ft. Dorr traction type. The underflow is ground with the clay. Some calcium carbonate is thus put into the clay, but not enough to matter a great deal. At times a newly installed Oliver filter is used to decrease the water content of the underflow from the thickener. This is a rather novel deviation from standard practice, and the net result of its installation will be watched with interest.

Another installation that is possibly new to the cement industry will be the use of a Bird centrifuge that will operate in conjunction with a Pennsylvania hammer mill and a Traylor ball mill for the grinding of clay. The clay (about 12 percent of the total raw mix) will first go to the Pennsylvania, reversible mill (size C938, serial 1275) operated by a 125-hp. Auto-Start ball-bearing, U. S. motor. The hammer mill will serve a 9½- x 10-ft. Traylor ball mill in closed circuit with a Dorr classifier (12-ft. wide FX). The classifier overflow will go to a constant head tank



Sugar rock screening tower is one of the more recent improvements

that delivers to the Bird centrifuge. This machine will make a plus and a minus product. The plus (the cake) will be returned to the ball mill and the minus (the effluent) goes to clay storage. The Bird centrifuge is said to operate successfully on un-thickened pulp. The operation of this new step in cement processing will be watched with interest.

In clinker grinding a dispersing agent (TDA) is added to the in-going clinker; a change has been made in the method of using that chemical. Formerly the TDA was received at the plant in powdered form and mixed with water before using. New steel tanks are now built, and henceforth the chemical is fed to the ball mills in a dilute form by means of Clarkson reagent feeders (American Cyanamid Co.).

Changes that affect both quality and quantity are very numerous. In the limestone quarry the pendulum conveyor that delivered the stone from the 5-cu. yd. Bucyrus-Erie electric shovel has been replaced by a transportation system, using three 35-ton capacity LeTourneau buggies, each drawn by a Caterpillar RD8 tractor. These machines deliver the limestone—a distance of about 1000 ft.—to the outside storage pile that serves the Farrel-Bacon primary jaw crusher. The shovel and equipment deliver about 6000 tons of stone per shift to the stock pile under which Jeffrey vibrator feeders control the flow of solids to the secondary crushing plant. Some 1000 tons per hour is reclaimed from the stock pile. The material is crushed to minus 3-in. so as to prevent rolling of the material on the Goodyear, Chain Belt conveyor system that delivers to the huge, half-million ton, cement rock storage pile.

Quarry Improvements

The limestone deposit is well brecciated and needs very little drilling and blasting to bring down sufficient limestone, but what drilling is needed is done by two Ingersoll-Rand, wagon type drills using 1⅛-in. star drills (replaceable) with steel up to 25-ft. long. A 2-stage, Model K500 Diesel, portable IR compressor supplies air.

Considerable churn drilling has been done on the deposit, and it has been determined that the deposit is essentially three huge folds of limestone, which insure an adequate supply of material for years to come. A 9-in. Bucyrus-Armstrong electric churn drill is constantly in use to determine the physical and chemical nature of the deposit in advance of excavation. The production of lime has been discontinued and the lime plant site will be used as a part of the new magnesium plant. However, the mining and processing of sugar rock for the Pacific Coast sugar refineries continues, and a new quarry has been opened up well below the cement rock quarry, and in Permanente Creek Canyon. The rock from this new quarry is delivered to the processing plant by a series of 36-in. belt conveyors that run almost horizontal and pass through two tunnels in the mountain; a rather novel innovation. This straight-line delivery of the sugar rock contrasts with the cement rock conveying system which follows the mountain contour. These three crude rock conveyors also have three changes in direction before the rock reaches the second stock pile. The sugar rock conveyor system is about a mile long.

Another novel feature in connection with the operation of these belt conveyor systems is the use of a field vulcanizer to splice the belts; no laces being used. The equipment is bulky and said to be expensive but the advantages should be obvious to all users of belt conveyors.

The folds of the limestone, and some vertical seams in the quarry contain some clay, so only a small amount is needed from the clay pit. A small, ½-cu. yd. Bucyrus-Erie shovel loads clay direct to Peterbuilt Diesel trucks.

Secondary Crushing—Grinding

In the secondary crushing plant a 5½-ft. Symons cone crusher has been added as well as additional Tyler Tyrock screens. This crusher augments a cone crusher and a No. 49 Kennedy-Van Saun fine reduction crusher which were part of the original installation. Commercial rock continues to be produced.

In the raw grinding department a third primary mill is being installed. This is a 9½- x 10-ft. Allis-Chalmers ball mill operating in closed circuit with a third Dorr FX, 12-ft. wide, classifier. This mill and the original F. L. Smidth & Co. 9- x 11½-ft. ball mill will be used for limestone. They will grind the material to minus 48-mesh. The third ball mill, and part of the original set-up, is the Traylor unit, 9½- x 10-ft. It will be used for the clay as previously outlined.

For the secondary grind of the

(Continued on page 41)

Interior of screening tower at lower quarry

An Expression of Confidence from Two of the Largest Rock and Sand Producers West of Chicago

•

Says Melville C. Erskine, Transportation Manager of Blue Diamond Corporation, Los Angeles:

"We are pleased to say, that for the past 14 years we have availed ourselves of the services of SIX WHEELS, INC., specialized transportation engineering, which has enabled us to keep our large fleet of trucks up to date and to take full advantage of maximum permissible pay loads without sacrifice of safety in performance and operation.

"A large percentage of our trucks have "MAXI" six wheel unit equipment and are engineered for proper load distribution to all axles, which has resulted in the most economical performance and low maintenance cost.

"We are convinced that to obtain the most economical results from our transportation equipment we must have the benefit of the service available from transportation engineering specialists who have made a study of the requirements in all fields of operations plus a thorough knowledge of construction and maintenance."

Says H. J. Fox, Mechanical Superintendent of Consolidated Rock Products Company, Los Angeles:

"Consolidated Rock Products Company has been buying SIX WHEELS, INC., units, bodies and hoists for the past 12 years and they have proved very satisfactory for our rock and sand operations.

"Some of the SIX WHEELS, INC., units have been running for a period of over eight years, with practically no maintenance cost, also meeting all the legal requirements of load limits on the highway.

"At the present, we are operating 150 pieces of equipment and are working on such jobs as Hansen and Sepulveda Dams."

The Rock Products Industry is just one of the many major fields we are serving

•

Where new heavy duty transportation records are being set--look for "MAXI" engineering

Phantom view of MAXI Unit installed, showing Parallelogram formation of unit with chain drive attachment.

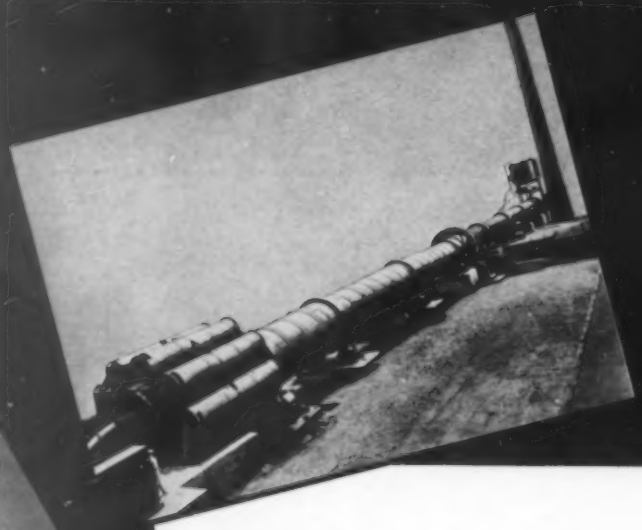
• *Other* "MAXI" *Services Available:*

MAXI 6 wheel units, four wheel drives, chain drive units, single and dual axle drives—MAXI dump bodies and hoists—diesel engines, lumber rolls—truck winches of all kinds, frame and wheel base alterations—auxiliary transmissions, power winches—hoists and cranes built to order—designing, developing and manufacturing of special units of all kinds.

SIX WHEELS, INCORPORATED

SPECIALIZED TRANSPORTATION ENGINEERING

1572 East Twentieth Street **Los Angeles, California**

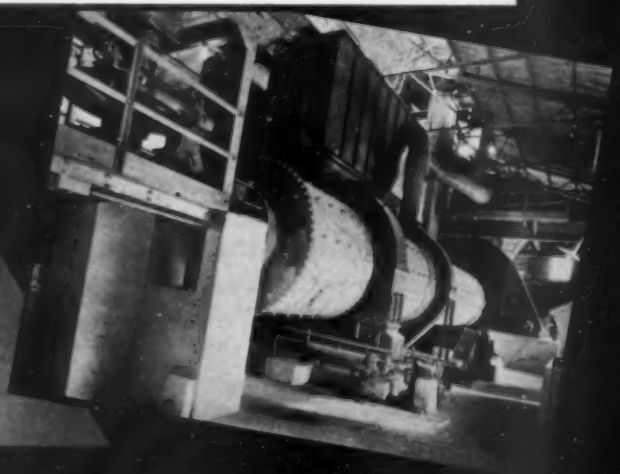


ROTARY KILNS

Machinery for Cement-Lime-Ore

In addition to a complete line of Rotary Kilns and Grinding Mills, F L. Smidth & Co. also manufacture Coolers, Pre-Coolers, Pre-Heaters, Recuperators, Air Separators, Agitators, Packers, Extractors, Feeders, Burners, etc. and their auxiliary equipment, for the manufacture of Cement, Lime, Ores, and Allied Products

GRINDING MILLS



F. L. SMIDTH & CO.

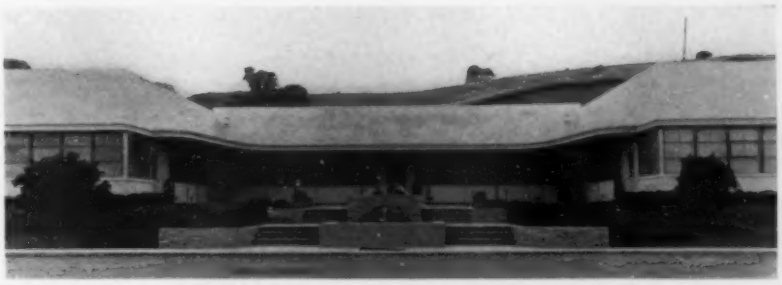
60 EAST 42ND STREET — CEMENT ENGINEERING CEMENT MACHINERY — NEW YORK, N. Y.

raw material a total of four ball mills will be used. The two new units are Allis-Chalmers, 9½- x 10-ft., and each will operate in closed circuit with a Dorr FX Bowl classifier, 16-ft. wide, and provided with a 28-ft. diameter bowl. Originally there were a Traylor and an Allis-Chalmers mill of this same size.

Wilfley pumps serve to deliver the minus 48-in. material, and clay slip as well, to the next successive stage.

The raw grinding in closed circuit with classifiers is said to have established a figure of 3- to 3½-k.w.h. per bbl. of cement, taking 1-in. rock and reducing it to 96 percent minus 200-mesh. This is about one-half to two-thirds of the average for the industry, it is said.

Tabulation of the raw grinding equipment for sake of clarity is as follows:



Front entrance to modernistic type office building constructed by the cement company at the plant

MILL NO.	SIZE	MAKE	PURPOSE
1 Old	9½- x 10-ft.	Traylor	Clay
2 Old	9 - x 11½-ft.	F. L. Smidth & Co.	Limestone, Primary
3 New	9½- x 10-ft.	Allis-Chalmers	Limestone, Primary
4 Old	9½- x 10-ft.	Traylor	Limestone, Secondary
5 Old	9½- x 10-ft.	Allis-Chalmers	Limestone, Secondary
6 New	9½- x 10-ft.	Allis-Chalmers	Limestone, Secondary
6A	9½- x 10-ft.	F. L. Smidth & Co.	Limestone, Secondary
7 New	9½- x 10-ft.	Allis-Chalmers	Limestone, Secondary
8 Old	7 - x 26-ft.	Traylor	Clay, Primary
9 Old	7 - x 26-ft.	F. L. Smidth & Co.	Clay, Secondary

Each of these mills is driven by a 500-hp. General Electric motor. To accommodate these newer mills the building has been extended and they will be serviced by a separate overhead electric crane.

The reason for the different makes of mills used in this section was based mostly on the need for quick deliveries, as each mill is of the best workmanship available.

The new Allis-Chalmers raw grind ball mill will take the rock from the side of one of the original raw storage bins via a Merrick Feedoweight. This delivers to a short cross-conveyor that serves mill.

The flotation plant, using the Fagergren cells of American Cyanamid Co., is not operated continuously, but as required. Its need is determined by the amount of chert in the limestone. Six Type SS, 66-in. cells are used for roughers and two similar machines as cleaners. Blending and storage tanks remain as previously described except for the addition of the 125-ft. Dorr thickener already referred to.

Kiln Room Changes

The kilns are arranged in four parallel units. The two middle kilns were original equipment and are Traylor and F. L. Smidth, respectively. No. 3 kiln, the next addition, is F. L. Smidth, as is the fourth. They are arranged as shown in the flow sheet in the gate fold, page 43, of this issue. It will be recalled that the Traylor kiln was 12- x 450-ft. with a rotary cooler, arranged in a straight line flow, 11½- x 120-ft. This kiln is fed by a 72-in. Ferris type feeder. Air from the cooler is drawn through two polycones of the Western Precipitation Co. The new kiln is a Unax, 11- x 464-ft. with 12-ft. enlarged ends, and is provided with ten 5-ft. diameter FLS chain coolers affixed to the periphery of kiln, as usual. Clinker is crushed by Traylor TY reduction crushers, with a Rockwood base on the drive motors.

The kilns are driven by 200-hp. motors of General Electric Co. and Westinghouse manufacture. Kilns No. 3 and 4 are provided with the new G.E. type B.T.A. motors, an alternating current motor with variable speeds. This is accomplished by a unique method of rotating (at wanted intervals) two parallel and concentric rings of brushes. The shifting of the brushes is accomplished by a small independent motor that rests above the assembly. The slurry feed is tied into this unit with what is called a synchro-tie motor, so that changes in the kiln r.p.m. give a corresponding change in the feed rate of the ingoing slurry.

When the third kiln was added no enlargements were made in the Cottrell electric precipitation plant; however, the fourth kiln required additional units in that department. One stack continues to serve the plant. The stack was built by Rust Engineering Co. which built the silos. Clinker storage provides for 500,000 bbl. capacity. Draft for the kilns is supplied by Buffalo Forge fans.

The newest kiln has the latest FLS control panel. The original panels and the new unit are arranged so one man can operate all four kilns. The panel has the following equipment:

(See page 60)

Hammer mill installation which is used in conjunction with a centrifuge and ball mill in the grinding of clay

Specifications for Central Valley Project

Test all sources of aggregates and set up elaborate specifications for production of materials; closely control alkali content of low-heat cements

DIRECT SUPERVISION of the Central Valley Project comes under the Bureau of Reclamation whose project staff numbers close to 650 men, most of whom are inspectors and testing engineers. Aggregates are tested in the pit and at the washing plants, and the concrete made from this material is tested at the Shasta dam and at Friant. No expense is spared to see that all materials are of the highest possible quality. Concrete pipe used for collecting seepage in the dam structure itself is tested at the place of manufacture. Even diamond drills have been called into use to remove cores from the massive concrete so that such cores can be subjected to the usual tests.

For the Friant and Shasta dams the government spent considerable time testing the deposits by pits and other means. Materials taken from the pits were screened and the characteristics of the different deposits plotted, giving the sand-gravel ratios, overburden, clay seams, water horizons, and other data. At the conclusion of this work certain deposits were designated as suitable for the contractors.

Many producers in the area feel that specifications should not name any particular deposit which apparently was the case, for obviously such procedure made it impossible for them to have any part of the contracts. However, producers of aggregates other than the contractors are supplying some material for the canals and for the concrete products, tile, etc., going into the project. The Fair Oaks plant of Pacific Coast Aggregates, Inc. and the Radum plant of the H. T. Kaiser Co., at Pleasanton, Calif., supplying aggregate for the Contra Costa canal. On the Madera canal, the contractors are supplying their own aggregate from the Friant aggregate plant; however, as the construction work gets more distant from present contractor's plants, the established producers in the district will undoubtedly be called on for more of their materials.

The specifications as outlined by the Bureau of Reclamation may be of interest to point out the trend in governmental requirements.

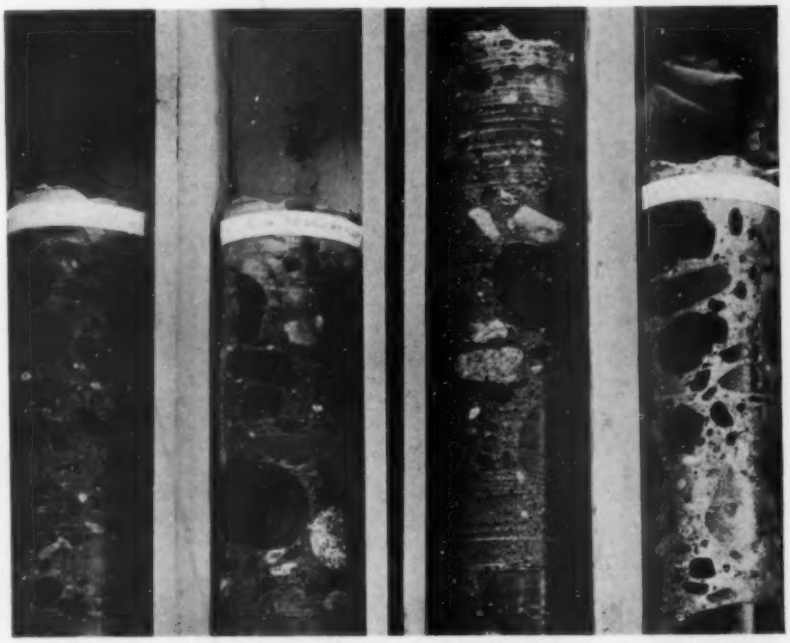
At Shasta, the deposit selected contained about 25 percent by weight of shaley and other mineral rock fragments that were structurally unsound. Special processing was required. This consisted of passing the sands through Marcy rod mills to break up and disintegrate the unsound particles. Three sizes of sand were stipulated with re-combining facilities. All stripping, treating, screening, washing, and transportation was under the supervision of the contracting officers. Even though the government did select the deposits, this action could not be construed as approving the material produced. The contractor was held responsible for quality and grading. All sizing screens were specified to be of the vibrating type. Even the number of sprays, their type, water pressure, etc., were specified. Hydraulic classification of the sand was stipulated.

Rod Mills Reduce Gravel to Sand

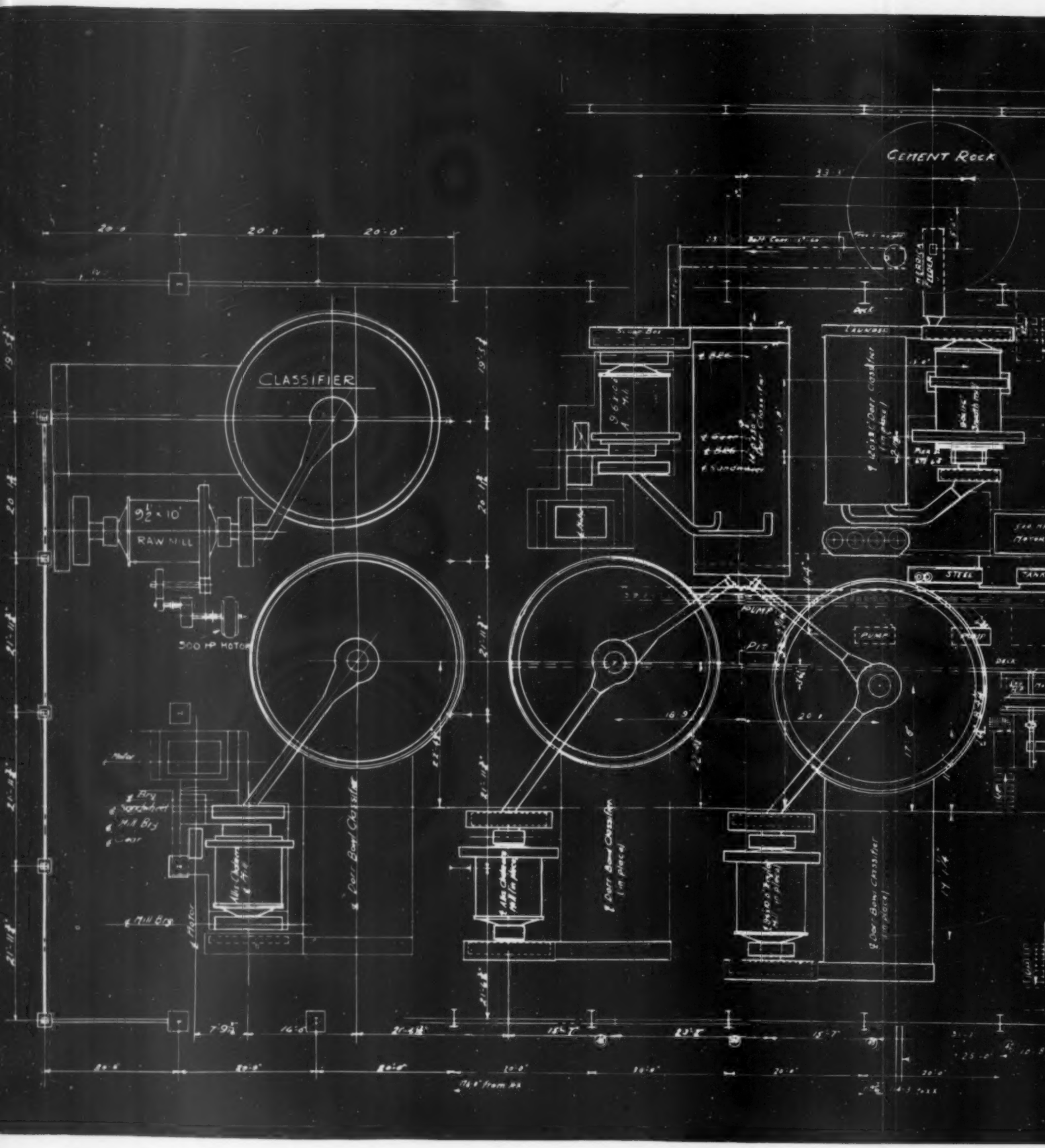
For any sand manufactured from gravel, it was specified that it had to be ground in suitable rod or ball mills in such a manner as to minimize flat, flaky, or sharp particles and to produce materials approximately cubical in shape. Rod mills did the job.

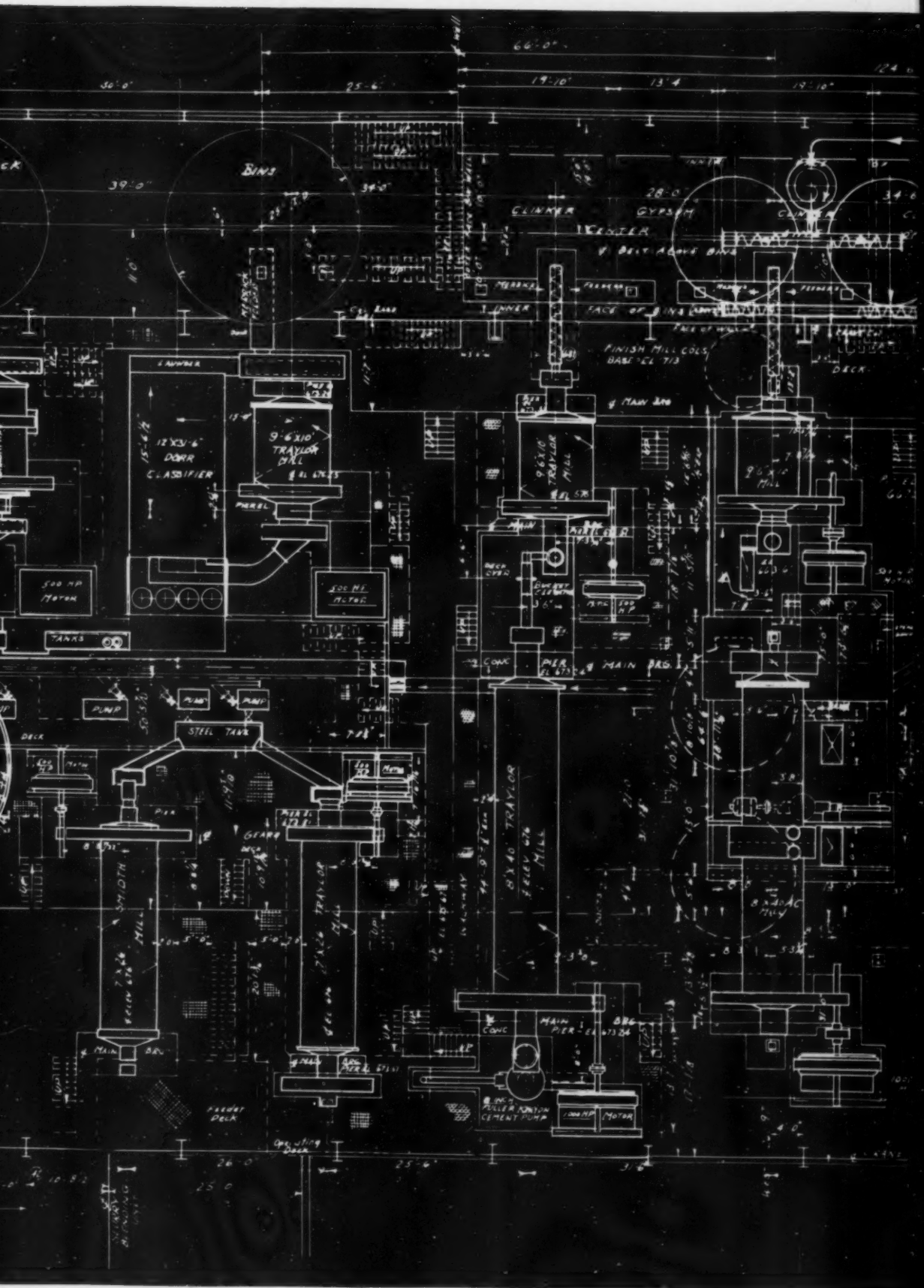
To utilize the greatest yield from the deposit it was stipulated that all oversize material should be crushed and the crushed material blended uniformly with the uncrushed gravel. The crushed material in any one size could not be in excess of 25 percent. All crushed material less than 3/16-in. had to be wasted.

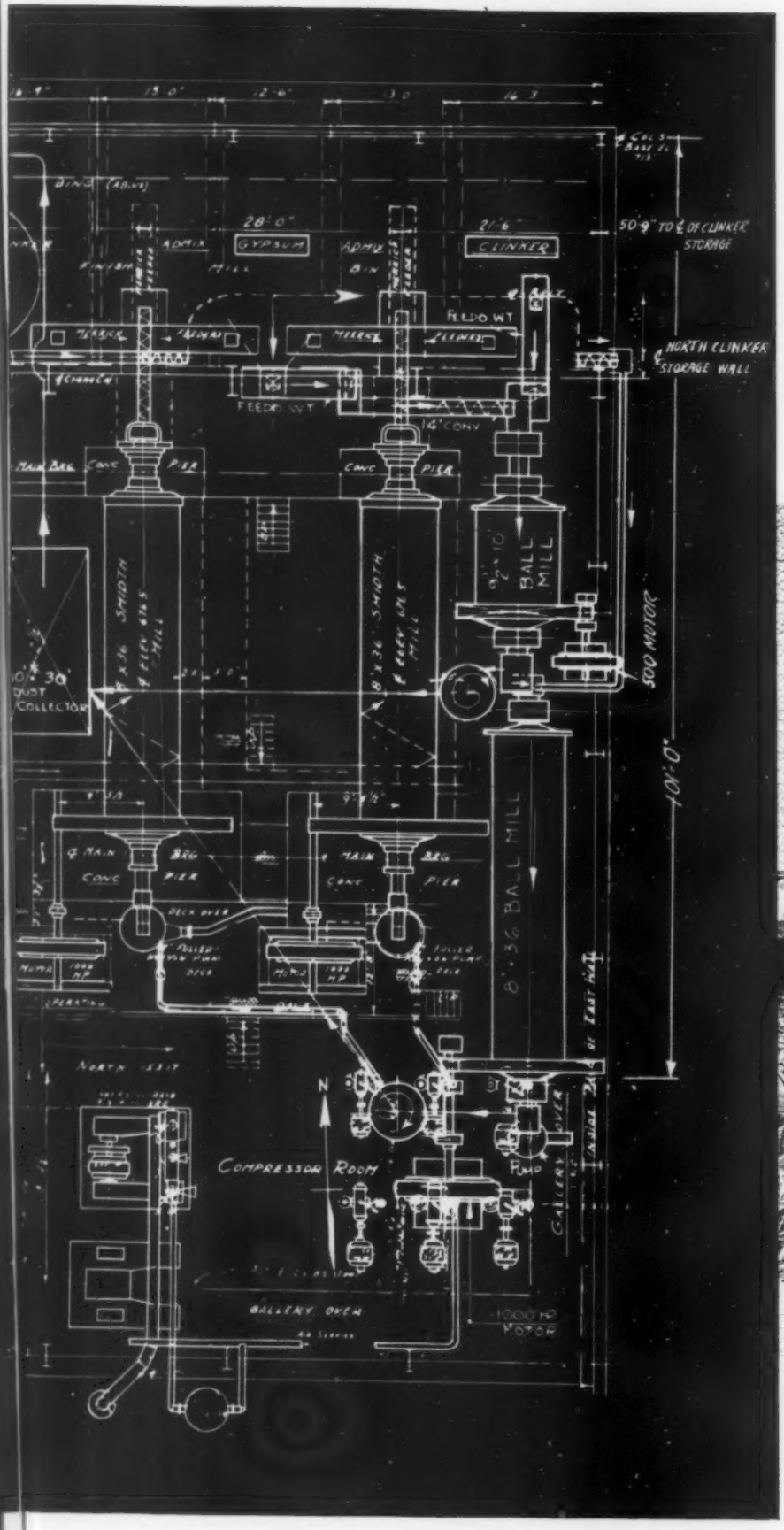
In storage the material had to be allowed to drain so as to maintain a reasonably uniform moisture content. Drastic changes in moisture content of the aggregate upset the smooth operation of the central concrete mixing plant. Stress was not



After concrete has set, drills cut cores for further testing of the mass concrete


CEMENT ROCK
CLASSIFIER
9½ × 10'
RAW MILL
300 HP MOTOR
PUMP PIT
PUMP
STEEL


BINS
CLINKER
GYPSUM
CLINKER
V BELT ABOVE BINS
FACE OF BINS
FINISH MILL COLS
BASE EL 713
MAIN BAY
12'X3'-6" DORR CLASSIFIER
9'-6"X10' TRAYLOR MILL
9'6"X10' TRAYLOR MILL
9'6"X10' MILL
500 HP MOTOR
500 HP MOTOR
TANKS
PUMP
PUMP
STEEL TANK
MAIN BAY
PIER
GEARS
SMIDTH MILL
8'X10' TRAYLOR
8'X10' FULLER KENYON MILL
8'X10'AC MILL
MAIN PIER
CONC
MAIN PIER
9" DIA FULLER KENYON CEMENT PUMP
1200 HP MOTOR
FREIGHT DECK
OPERATING DECK



Central Va
Project

On these pages may be s
which very vividly picture
mendous importance of th
Valley project to California
cement and aggregates pr
supplying the materials for
power and irrigation dams
It is estimated that over 1,0
of cement are required for
alone. The Friant-Kern ca
160 miles long, the first 3
which will be concrete-line
require 4600 cu. yd. of co
mile. The Madera canal
miles long and will require
yd. of concrete per mile.

Left: Flowsheet of the recentl
panded Permanente Corpor
cement plant which will ha
production of 16,000 bbl. per
This plant was built primari
supply cement for Shasta d

Right: Map prepared by the
fornia Highway department s
ing the Central Valley pr
Locations of many of the ce
and aggregates plants can be
ted on this map

Valley
ject

ay be seen a map
pictures the tre-
e of the Central
lifornia and to the
ates producers in
rials for the great
dams and canals.
ver 1,000,000 bbl.
red for the canals
Kern canal will be
first 30 miles of
rete-lined and will
d. of concrete per
canal will be 40
require 2400 cu.
mile.

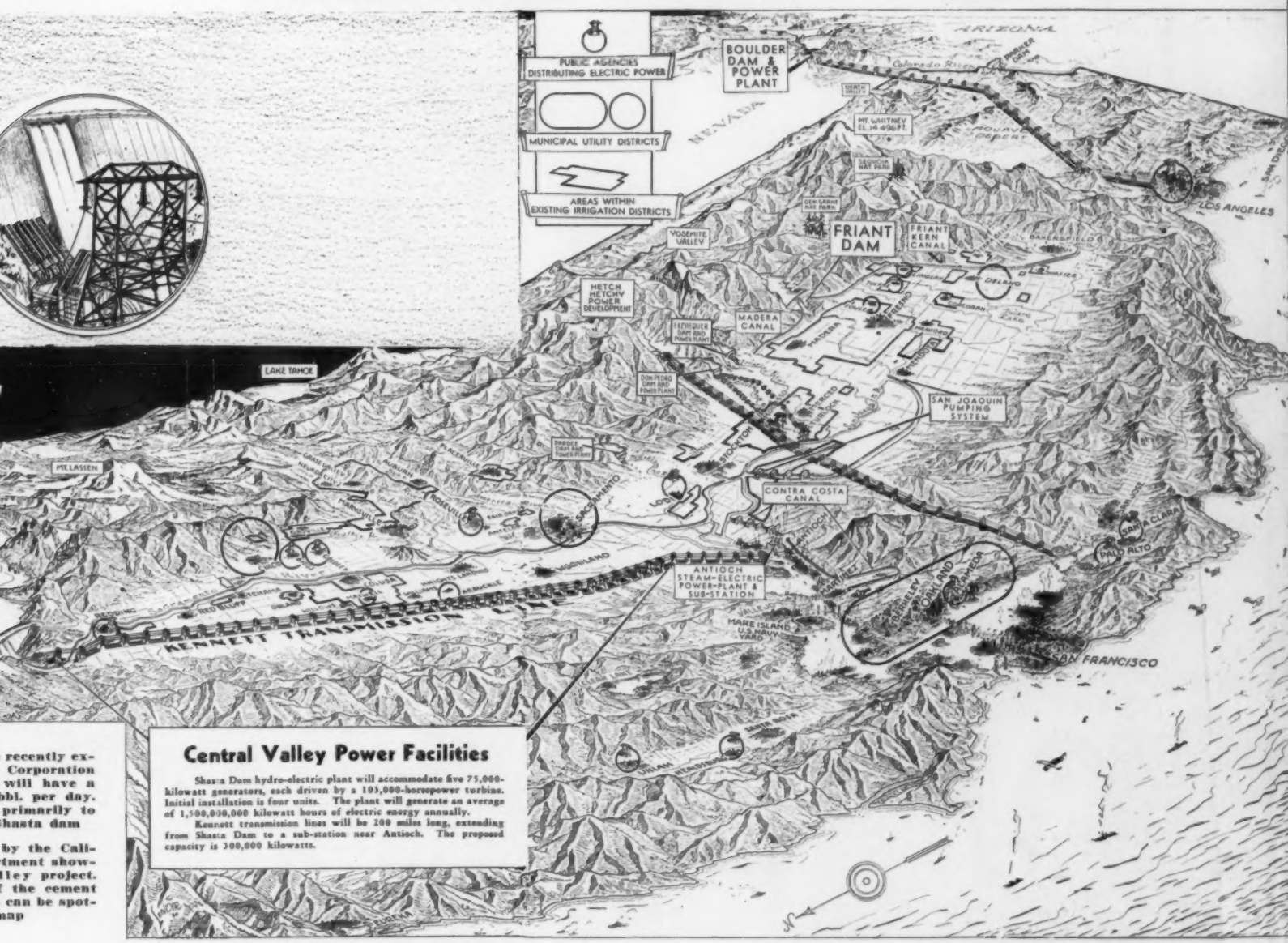
(Continued from page 35)

When any of the 15-ft. 3-in. diameter power penstocks are opened for starting each of the power units, the rise in the Sacramento river below will be about two feet. This surge is considered excessive, so the main reason for the Keswick dam, 10 miles below, is to even off this surge.

Friant, the second largest dam of the project, located 20 miles east of Fresno, will control the headwaters of the San Joaquin river. It is 300-ft. high, 3430-ft. long at its crest and 280-ft. thick at its base. It also required a new sand and gravel plant and concrete mixing plant of large size, which were described in ROCK PRODUCTS, November, 1939, p. 36.

Tieing in with these three dams will be a series of five canals having a total length of 350 to 400 miles.

Group of federal, state, and contractor officials charged with the safety and supervision of construction at Shasta. Left to right: E. T. Greene, safety engineer, Pacific Constructors, Inc.; F. I. Ross, safety engineer, Bureau of Reclamation; L. H. Reinhardt, California Industrial Accident Commission representative; W. A. Dexheimer, chief inspector for Bureau of Reclamation; and William Greeley, chief engineer for Pacific Constructors, Inc.



Central Valley Power Facilities

Shasta Dam hydro-electric plant will accommodate five 75,000-kilowatt generators, each driven by a 103,000-horsepower turbine. Initial installation is four units. The plant will generate an average of 1,500,000,000 kilowatt hours of electric energy annually.

Kennett transmission lines will be 200 miles long, extending from Shasta Dam to a sub-station near Antioch. The proposed capacity is 300,000 kilowatts.

recently ex-
Corporation
will have a
bbl. per day.
primarily to
Shasta dam

by the Cali-
rtment show-
lley project.
the cement
can be spot-
nap

laid so much on the amount of moisture in the aggregates but more on the uniformity of that content. Eight percent moisture was the maximum allowable.

Payment was stipulated on the basis of the ton (2000 lb.) of surface dry material. Automatic scales equipped with totalizers had to be provided to indicate the cumulative weights. Scales had to be accurate to one percent. These weights were the basis of payment after deductions for surface moisture.

Keep Down Alkali Content

The sand particles had to be hard, dense, durable, uncoated, nonorganic fragments that would pass a 3/16-in. screen. Dust, lumps, loam, alkalis, organic matter were specified as shown in the tabulations.

It is interesting to note that in the cement specifications the amount of alkali was held to 0.6 percent Na_2O. Some cement producers felt that if their product had to be low in alkali, why not the aggregate? We wish to point out that the amount of alkali in the aggregate was kept within limits.

Gravel had to be of similar quality to the sand as regards soundness. The material had to pass a 6-in. square opening and had to be separated in four sizes, ¾-in. sq., 1½-in. sq., and 3-in. sq. openings. Screens with other openings were allowable if equivalent sizes were maintained.

The maximum amount of deleterious substances are shown in the following:

Sand Specifications

	Percent by weight
Removed by decantation	3
Shale	1
Coal	1
Clay lumps	1
Total of other local deleterious substances (such as alkali, mica, coated grains, and soft, flaky particles)	5

(b) The sum of the percentages of all deleterious substances shall not exceed eight percent, by weight.

(c) All sand shall be free from injurious amounts of organic impurities. Sand producing a color darker than the standard in the colorimetric test for organic impurities may be rejected.

GRADING—The finished sand had to be well graded from coarse to fine and, when tested by means of Tyler standard sieves, fall within the following limits of gradation:

Retained On	Cumulative percent by weight
No. 4 sieve	0 to 5
No. 8 sieve	10 to 20
No. 14 sieve	20 to 40
No. 28 sieve	40 to 70
No. 48 sieve	70 to 88
No. 100 sieve	90 to 95

The sand had to have a fineness modulus of not less than 2.50 nor more than 3.00, and during normal operation the grading of the sand to be controlled so that the fineness moduli of at least nine out of ten test samples taken at the plant will not vary more than 0.10 from the average fineness modulus of all test samples. The fineness modulus was determined by dividing by 100 the sum of the cumulative percentages retained on Tyler standard sieves numbers 4, 8, 14, 28, 48 and 100.

SOUNDNESS — The sand may be rejected if the portion retained on a No. 48 screen, when subjected to five cycles of the sodium-sulphate test for soundness, shows an average actual loss greater than eight percent, by weight.

A corner of one of the many testing laboratories at Shasta dam

Gravel Specifications

DELETERIOUS SUBSTANCES—(a) The maximum percentages of deleterious substances in any size of coarse aggregate could not exceed the following values:

	Percent by weight
Removed by decantation	1
Shale	1
Coal	1
Clay lumps	½
Soft fragments	5
Other local deleterious substances.	3

(b) The sum of the percentages of deleterious substances could not exceed eight percent, by weight.

GRADING—The gravel had to be furnished in four size separations as specified and orders for the individual sizes based on utilizing, insofar as practicable, the entire yield of suitable materials in the deposit from which the materials are obtained. It is expected that orders for the various sizes of gravel may be varied within the following limits, expressed as percentages of the total gravel:

3/16- to ¾-in. size	15 to 30 percent
¾- to 1½-in. size	20 to 30 percent
1½- to 3-in. size	20 to 35 percent
3- to 6-in. size	15 to 30 percent

Separation of the gravel into the several sizes and handling of the aggregates after separation had to be such that the percentage, by weight, of undersize material in a given size of aggregate plus the percentage of oversize material in the next smaller size could not be more than 8 percent for the 3/16- to ¾-in. gravel; 10 percent for the ¾- to 1½-in. gravel; 12 percent for the 1½- to 3-in. gravel, and 12 percent for the 3- to 6-in. gravel. These percentages are maximum values and the government reserved the right to require lower values.

SOUNDNESS—When gravel passing a screen having 1½-in. sq. opening is subjected to five cycles of sodium sulphate, the loss should not be over 10 percent and either or both the sizes of gravel responsible for the loss may be rejected.

Cement Specifications

The cement specifications called for a low heat cement having an 0.6 percent Na_2O alkali content or lower. This latter specification seemed to be the one creating the most discussion but plants by either selection of raw materials, or changes in their processing all were able to meet the requirements. The cement had to pass the requirements of all Federal projects (Spec. SS-C-191a) with the added requirement that the average specific surface of the cement in the bin shall not be less than 1800 sq. cm. per gram, and that no individual sample shall be less than 1600 sq. cm. per gram.

Improvements At the Friant Dam Project

Aggregates plant adds more haulage units; increases sand classification capacity. Concrete mixing plant uses ice water, and sprays coarse gravel to keep temperatures down

AT THE SHASTA DAM of the Central Valley project, the sand and gravel, including its transportation to the construction site, is done by a separate company from the one doing the actual construction work. At Friant, Griffith Co. and Bent Co. have the entire project under their jurisdiction. These two joint-contract companies will also supply the aggregates for a part of the two canals that start at this dam site. One canal, the Madera, threads north; the longer and larger, Friant-Kern canal, will deliver water to the south, a distance of 160 miles.

Owing to the increase in capacity of the plant, and to the transportation of material greater distances at the sand and gravel pit, there are now eight RD8 Caterpillar tractors pulling 14-cu. yd. LeTourneau scraper-carriers. These discharge to one of two field pits serving two pit conveyors. The two conveyors are arranged in the form of a "Y," one leg of which is 1065 ft. long and the other 900 ft. long. The conveyors deliver to a scalping screen and crusher, but owing to the scarcity of oversize material in the pit, this plant is inoperative except for possibly an hour per week.

As the pit grew in depth, water was encountered, and a novel system of drainage has been worked out to solve the problem. A 100B Bucyrus dragline (electric) with a 3½-cu. yd. bucket digs pits over the area, permitting water in the deposit to drain into these pits, from which it is pumped to the river by 6- and 8-in. centrifugal pumps.

From the scalping plant, a 36-in. B. F. Goodrich belt delivers the material to the washing plant. The plant uses Stephen-Adamson vibrating screens throughout.

Hydroseparator and Screws for Sand Classification

The minus 3/16-in. sand goes to a hydroseparator. Overflow is silt and is wasted. The hydroseparator delivers a split stream to two 48-in. classifiers which gives the coarser sand size. The overflow from these two classifiers passes to two similar machines which gives a second and smaller sand size. Both sands are stockpiled separately but blended by the reclaiming belts to one product. The screw classifiers and hydroseparator were supplied by Western Machinery Co. These units have worked out very successfully from a mechanical and quality standpoint.

The plant produces four sizes of gravel:

3- to 8-in. cobbles
1½- to 3-in. gravel
¾- to 1½-in.
3/16- to ¾-in.

These sizes are stockpiled separately and reclaimed by belts running in tunnels below. All materials are shipped to the dam, about a mile away, by standard gauge railroad equipment.

At the loading terminals, three standard batching hoppers have been installed for materials trucked to the canal construction site.

One novel feature is the increasing amount of gold that the plant recovers as the pit approaches bedrock.

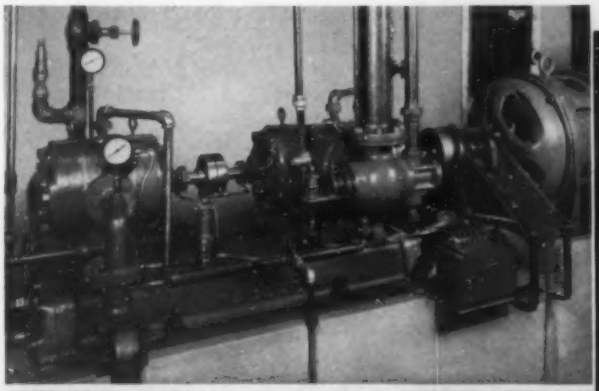
(Continued on page 50)

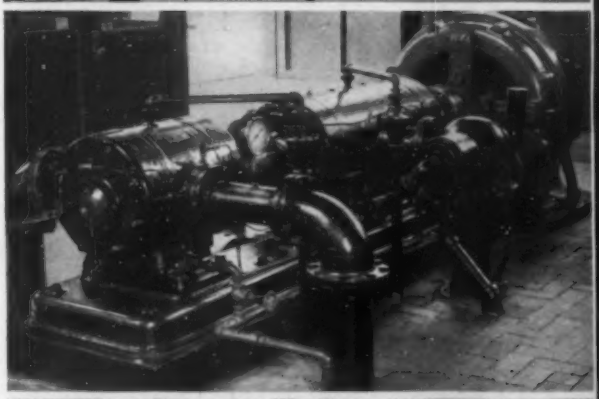
Left: Construction view of Friant dam, showing hammer head cranes for placing concrete. Right: Close-up of mixing plant which receives aggregates by conveyor from nearby aggregates plant

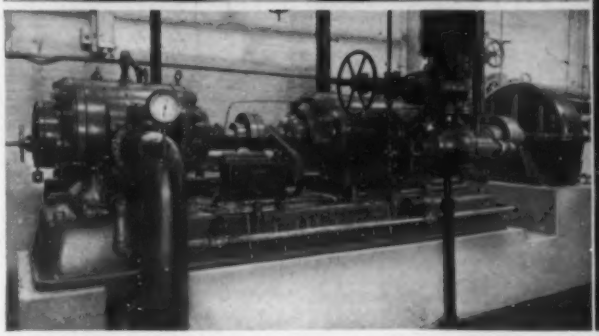
Built for TROUBLE-FREE operation

Rush! Rush! Rush! More speed all along the line. That's the cry today. But speed is not enough . . . equipment must be able to stand up under the most severe operating conditions . . . service must not be interrupted. Breakdowns—delays—time out—all mean loss of vital production and money out of pocket.

With this thought uppermost, only the best of materials and workmanship go into the makeup of Fuller Rotary Compressors. They're built for trouble-free operation and performance records prove them to be just that. When, after long, gruelling operating periods, inspection and check-up is desired, the machine design permits doing this quickly and easily.







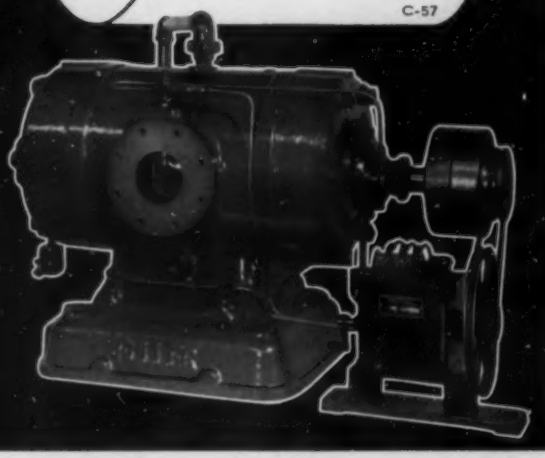
FULLER ROTARY COMPRESSORS

- Direct drive
- Easy to operate
- Low maintenance
- Simple foundations
- No bearing take-up
- Small space required
- No air-line pulsations
- Parts readily accessible
- Sturdy yet light in weight
- Blades automatically compensate for wear
- No valves to leak or seats to grind
- Unnecessary bulk eliminated
- Maintained capacities for the life of the machine
- No multiplicity of parts requiring frequent attention and replacement

BUILT FOR ANY PRESSURE TO 125-LB.

FULLER COMPANY
CATASAUQUA, PENNA.
Chicago: 1118 Marquette Bldg.
San Francisco: 320-321 Chancery Bldg.

C-57



Amalgamation barrel to recover gold

About $20,000 per month is now recovered. The recovery plant consists of screen-wire riffles. These are washed out from time to time to a 24-in. Southwestern jig. The hutch product then passes to an amalgamation barrel where most of the gold is recovered and retorted from the amalgam. Tailings from the amalgamation barrel, as a matter of precaution, pass to a smaller 12-in. jig of the same make. The entire assembly is housed in a small building set off from the rest of the operations.

Early in August, some $5000 in gold was stolen, "highgraded," from the recovery plant, making it possibly the first case of "highgrading" from a sand and gravel plant.

Central Mixing Plant Has a Cooling Plant

The central mixing plant is similar to that at Shasta except that it uses four Koehring mixers. The Johnson batchers, like those at Shasta, are automatically operated. Pumicite from a local deposit is added to the mix to increase workability at about 20 percent of the weight of the cement used. This permits pouring concrete with a 1- to 1½-in. slump and still maintain suitable workability.

Another novel feature is the use of ice water (slush) for mixing concrete. The ice plant, which produces the equivalent of 400 lb. of ice per minute, comprises two circular drums in which cold water is sprayed onto the inner surface. The water freezes instantly and is then shaved off by revolving knives. Water from the San Joaquin river is pre-cooled and carries the slush ice to the mixing plant. Surplus water from the batching assembly is returned to the ice plant and passed over cooling coils. By the use of ice water and sprays on the coarser gravel, mixing temperatures of 72 deg. F. are maintained.

In the mixing plant, delayed timer switches have been installed so as to "thread" out the flow of material into the mixers. Mixer tests have determined ideal sequence which is substantially as follows: Cobbles and water enter mixer at first stage; then a four-second delay when fine gravel starts along with the pumicite and intermediate gravel; followed by a two-second delay when the sand and cement starts. All the material then enters the mixer about the same time. This permits a slight increase in the tempo of the operation. A complete cycle is about the same as at Shasta.

Jig to recover gold from sand gravel

The mixing plant at Shasta has one control room for batchers and mixer. At this operation the two control rooms are separate. Similar to Shasta, batchers have several sets of scale beams so that several designs of concrete can be made without the operators leaving the control rooms. All movement of materials, batching, mixing time, are automatically recorded on an elaborate device so that all phases of concrete preparation can be checked.

The pumicite used is trucked to the plant from a deposit that is a short distance away. The pumicite is about 95 percent minus 325-mesh with some lump pumice in bands. The deposit was formerly operated from tunnels but power shovels are now used. As the deposit will eventually be buried by the waters of the Friant dam, a large stockpile is being built up above water levels.

Concrete from the mixers is delivered to a series of circular buckets, four to a car. These are delivered to the dam where whirley and hammerhead cranes place the material as needed. This system is said to be faster than the cableways used at Shasta.

The Friant dam is about 65 percent completed, and by March, 1942, it is expected that the project will be finished. M. H. Slocum is superintendent for Griffith Co. and Bent Co. R. B. Williams is construction engineer for the Bureau of Reclamation.

Test Resin in Concrete

STATE HIGHWAY ENGINEER C. R. McMillan of South Carolina has reported that the highway department, Federal Public Roads Administration, and the Portland Cement Association are cooperating in the construction of a test section of road in Greenville county which will be built with concrete in which resin has been introduced. The resin is designed to increase the resistance of concrete roads to freezing and thawing. Some 24 types of cement will also be tested.

Typical screw classifier for reclaiming different grades of sand

DORR'S BIG 4
ON THE
CENTRAL VALLEY PROJECT

DESILTING for All American Canal

CLOSED CIRCUIT GRINDING for Permanente Cement

SAND FRACTIONATION for Shasta Dam

WATER SOFTENING for Metropolitan Water District

ON FOUR technical fronts we have played our part in the vast Central Valley project—the largest irrigation and soil conservation job in history—embracing some 18,000 square miles of western land.

ALL AMERICAN CANAL

72—125-ft. Dorr Thickeners providing 28 acres of sedimentation area for settling 70,000 tons of solids per day from 8 billion gallons of turbid Colorado River water, thus preventing deposition in this 210 mile irrigation canal.

SHASTA DAM

A battery of Dorr Hydroseparators and Classifiers for washing and fractionating 2000 tons of sand per hour for recombination as high specification concrete sand—just as we did at Boulder and Grand Coulee dams.

METROPOLITAN WATER DISTRICT

A pair of 200-ft. Dorr Clarifiers and Dorrco Flocculators for softening and settling 150 million gallons of All American Canal water for domestic consumption in Los Angeles and other cities on the south coastal plain.

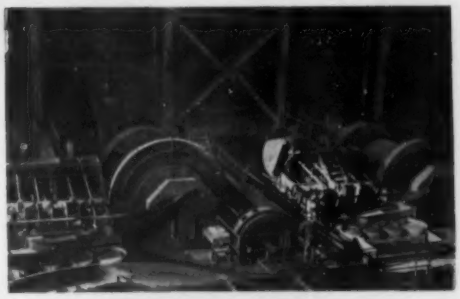
PERMANENTE CEMENT CO.

Dorr Classifiers, Bowl Classifiers, Thickeners and Slurry Mixers for closed circuit raw grinding and slurry handling at this 16,000 barrel a day plant, supplying Shasta Dam and other Central Valley construction jobs.

THESE four major projects in the Central Valley are significant from the standpoints of both magnitude and variety. Different, to be sure, but similar in that all deal with Dorr's specialty—the wet handling of solids suspended in liquids.

Let's talk things over if your "solid-liquid" problem relates in any way to cement manufacture, sand preparation, water purification, etc.

ALL AMERICAN CANAL DESILTING WORKS
Initial filling of one of Dorr-equipped settling basins



PERMANENTE CEMENT
Part of Dorr C.C.G. System

METROPOLITAN WATER DISTRICT
Dorr equipped softening plant

SHASTA DAM
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The standard mill for such materials as:

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Bentonite
Clay, Kaolin
Phosphate Rock
and Gypsum, etc.

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Record high tonnages per horse-power are obtained with the latest type of Raymond Low Side Roller Mill.

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General view of Fair Oaks plant recently completed by Pacific Coast Aggregates, Inc. Storage for minus 2½-in. gravel is to the left, and plus 4-in. cobble storage at the right

River Supplies New Material

New Fair Oaks plant of Pacific Coast Aggregates, Inc., meeting big defense demand from Central Valley projects

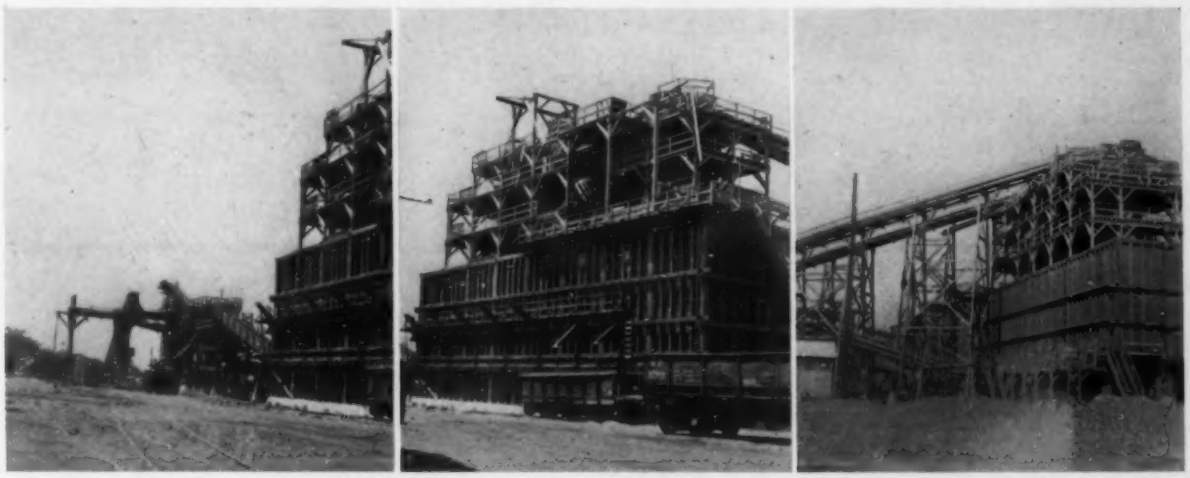
FAIR OAKS plant, located about 16 miles east of Sacramento, is the latest new addition to the many sand and gravel operations of the Pacific Coast Aggregates, Inc., San Francisco, Calif. The plant was completed early this year.

At this same location there has been a sand and gravel operation for many years owned and operated by the same company. However, owing to the increasing demands for aggregates in the Central Valley region, along with more stringent specifications, it was decided to build a new plant and junk the old one. The materials produced at the plant are said to be among the best in the northern and central California districts and as such find a wide market.

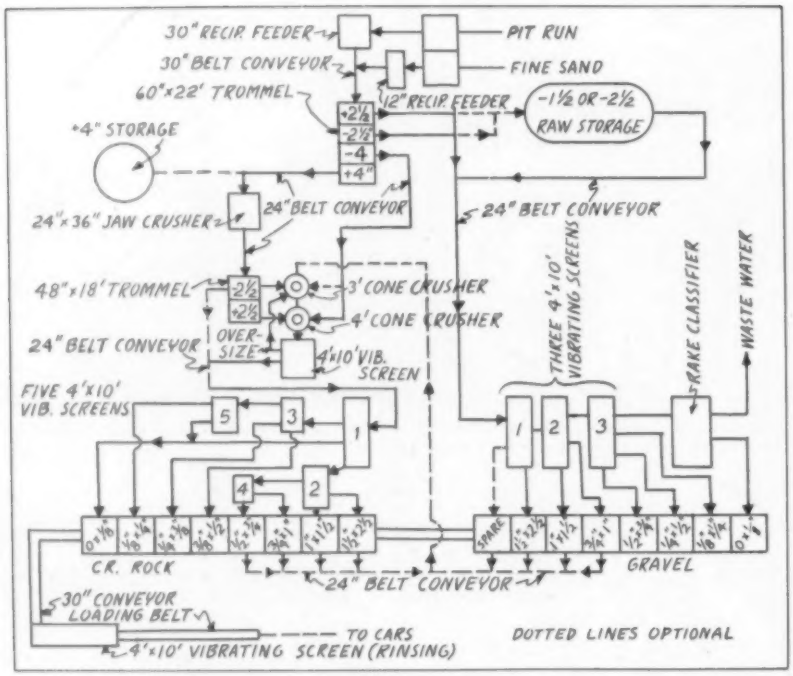
Sand and gravel, as well as crushed rock are shipped mostly by rail via the Southern Pacific Railroad, but a small amount compared to the total is shipped by truck. The largest user at the moment is the California State Highway Department, but defense projects at North Sacramento and Mather Field are taking a substantial part of the production.

The State is building a new, four-lane highway from Davis to Dixon, Calif., and practically all of the aggregate for this project is being shipped from the Fair Oaks plant.

In North Sacramento the Federal Government is building one of the largest air fields and repair facilities for its flying defenses. This unit will do all the repairing of airplanes for the Pacific Coast, and some of the Pacific Island bases. A great portion



Left: Batching and loading facilities in left background, screening plant to the right. Center: Sizing screens are located over bins. Right: Reclaiming gravel or crushed rock by means of belt conveyor paralleling bins



Flow sheet of screening, crushing, and storage facilities at Fair Oaks plant

of the aggregate used is for asphalt and concrete runways.

Larger Stockpiles Required Due to High Water

The main source of sand and gravel is along the banks of the Sacramento river adjacent to the plant. Even though the plant has been in operation many years, there are no large excavations in evidence, for each winter the high waters of the river bring down a new supply of material. Owing to these high waters for long periods of time it is necessary to carry a large stockpile of minus 2½-in. material above the flooded areas. With this requirement in mind the plant was designed so that all, or any part of the minus 2½-in. material could be sent to the stockpile. Actually there are several stockpiles, the larger ones being built by re-handling with a Bucyrus-Erie shovel and a Northwest clam shell rig. The shovel takes material from the primary pile, casts it to the clam shell where the Hayward bucket grabs the material and deposits it in the larger piles nearby. The primary stockpile has 50,000 tons therein but the other piles are much larger; possibly a quarter million tons.

The primary stockpile takes all or a part of the minus 2½-in. material from the 60-in. rotary primary screen by way of a 36-in. Boston Woven Hose & Rubber Co. belt conveyor and deposits it in the stockpile. A Link-Belt tripper unloads the belt. Under the stockpile runs a re-claiming tunnel with six gates that all discharge to the re-claiming belt.

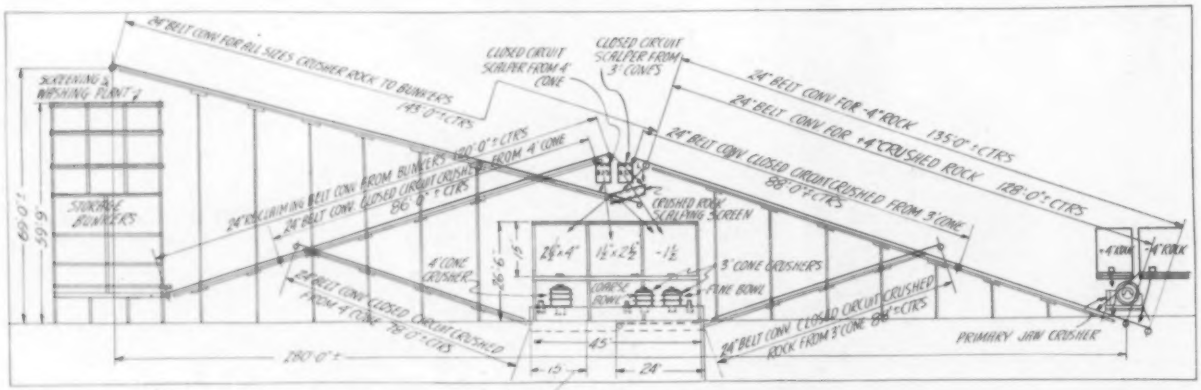
This plant, like many of the California plants, recovers a small amount of gold from the sands. Special type gold recovering riffles are used. Material caught in the riffles is amalgamated and shipped to the mint. The amount recovered is small but sufficient to make it worth while.

Haulage Units Carry 16-cu. yd. Loads to Plant

Loading is done at the main pit by a 2-cu. yd. P&H Diesel dragline that loads directly to a Bodinson field hopper. The hopper is mounted on skids. The hopper discharges to a 16-cu. yd. Euclid "buggy" which transports the sand and gravel to the plant. The bank of gravel is seldom over 18 ft. high, of which about 6 ft. is under water. The gravel for the most part is not much over 9-in., but occasionally there are larger boulders in the 12- to 18-in. range. These are scalped out at the grizzley over main plant receiving hopper. The Euclid buggy is provided with 18- x 24-in. "Earth Mover" General tires.

The pit run material is unloaded to one of two large hoppers, the top of which is at ground level and provided with 75 lb. rail grizzlies on 9-in. centers. The bottom flange of the rail is up. There are two of these hoppers side by side, one for pit run gravel and one for the finer sand. Under each of these hoppers is a Link-Belt reciprocating feeder that drops the material onto a 30-in. inclined belt conveyor, 203-ft. 9-in. centers.

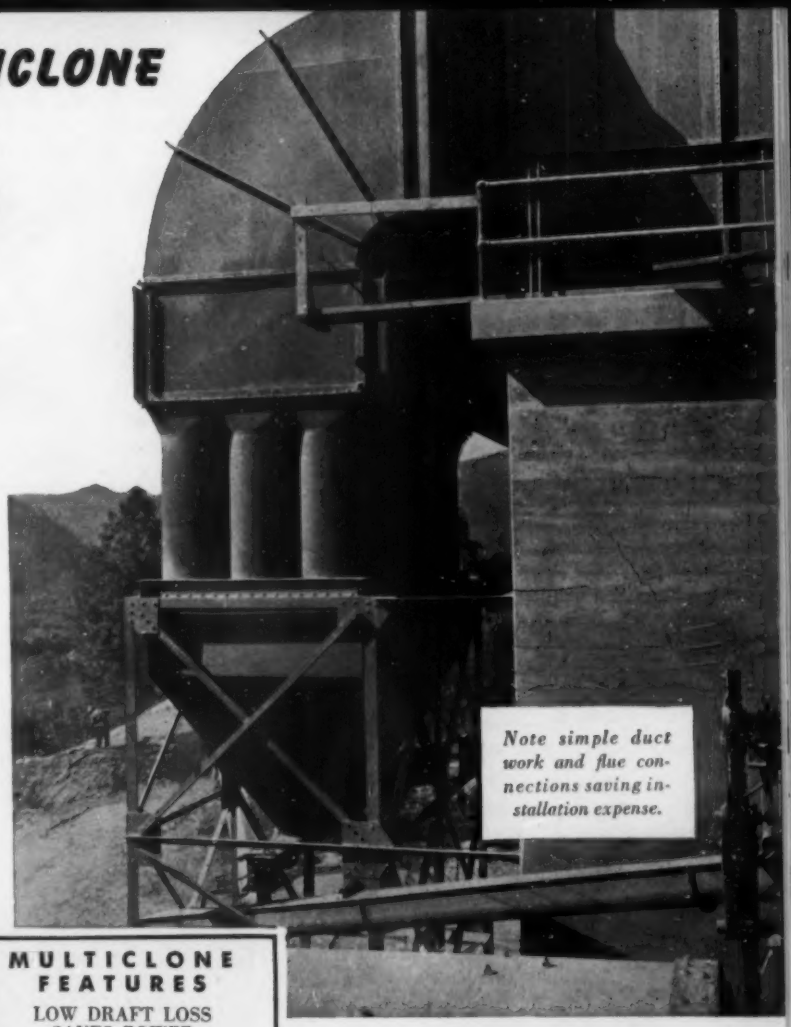
This belt discharges to a 5- x 22-ft. Bodinson trommel screen which is divided into four sections. The first two sections produce the minus 2½-in. material which can be sent to processing plant or stockpiled or both simultaneously. The end sections produce a minus 4-in. material which is sent to the three secondary crushing plant bins. Plus 4-in. material can go to the 24- x 36-in. Superior jaw



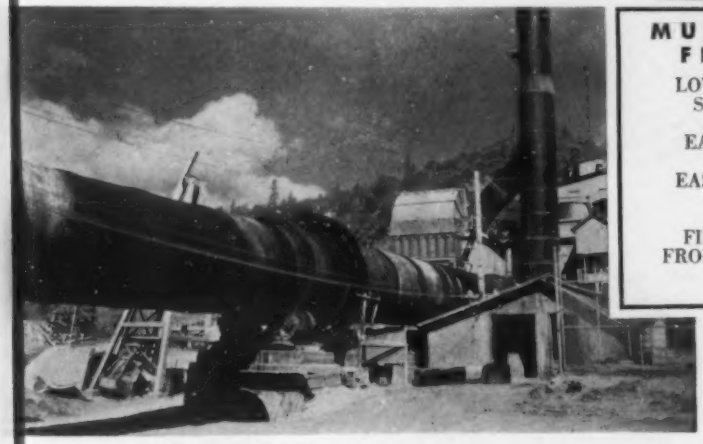
Showing arrangement for secondary crushing and screening to provide flexibility in meeting various specifications

ANOTHER MULTICLONE SUCCESS STORY — TOLD IN 13 WORDS

WHEN WE ASKED this customer how he liked his Multiclone installation, his reply told a lot in a very few words. According to Vice President and General Manager, W. H. Muirhead..."Multiclones make a neater, more satisfactory installation, cheaper to install, easier to operate." At the Gold Hill Plant of the Beaver Portland Cement Company a 24 VD Multiclone handles kiln gases (80,000 CFM at 600° F.), obtaining an excellent dust collection and returning it to the kiln feed. Let us tell you how Multiclones will help solve your dust collection problem. Multiclones are available in assemblies of 6", 9" or 24" diameter tubes providing a range of collection efficiencies to meet your requirements. We have available test units of various sizes for actual demonstration in your plant. Our test units are identical in size to commercial operating installations. Write for full information.



Note simple duct work and flue connections saving installation expense.



Over-all view of Beaver Portland Cement plant at Gold Hill. Note Multiclone in background.

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crusher or to the cobble storage pile. A considerable yardage of cobbles are on hand.

Produce Two Types of Materials

The plant produces essentially two materials.

(a) Washed and sized gravel in the following sizes:

1½- to 2½-in.
1- to 1½-in.
¾- to 1-in.
½- to ¾-in.
¼- to ½-in.
⅛- to ¼-in. sand
0- to ⅛-in. sand

(b) Crushed stone produced from crushing cobbles (these are not washed) in the following sizes:

2½- to 1½-in.
1½- to 1-in.
1- to ¾-in.
¾- to ½-in.
½- to ⅜-in.
¼- to ⅜-in.
⅛- to ¼-in.
0- to ⅛-in.

The storage bins are so arranged that any of the coarser sizes of the gravel, or coarser sizes of crushed rock, can be returned to the secondary crushing plant for finer reduction, after which the re-crushed material is again returned to the screening plant over the bins.

Two parallel truck-ways run under the bins for loading of trucks. For loading gondolas, a 30-in. conveyor belt runs midway between the long axis of the bins. This belt after leaving bins elevates material to a rinsing screen where aggregates receive a thorough washing before discharging to cars. Owing to the excellence of the material, very little breakage occurs while loading. The loading belt is fed by a series of gates from each bin. The gates are controlled from outside the structure by a series of levers and cables. The arrangement is such that most any desired mixture of aggregates can be made on this belt whether of washed gravel, crushed stone, or mixtures of the two.

Tripper which is designed to evenly distribute material on both sides of stockpile conveyor

Just beyond the rinsing screen assembly, and in line with it, is an automatic batching plant with equipment furnished by Conveyor Co., Inc., Los Angeles, Calif. Kron springless scales of 10,000 lb. capacity are a part of the batching assembly.

The testing laboratory, where all aggregates receive a final testing and inspection, is located at the top of the structure.

Secondary Crushing and Screening

For secondary crushing a 3-ft. and a 4-ft. Symons cone crusher are used. The screening plant for washed gravel consists of a battery of three vibrating screens. All are double-deck screens and supplied with Link-Belt sprays for washing the various sizes. Sands go to a Bodinson rake classifier. All of the screens in this department were made by Bodinson Mfg. Co. to designs supplied by Pacific Coast Aggregates, Inc. They are locally referred to as PCA screens.

Belt conveyors are used throughout for transportation of the various products produced. The essentials of these belts are shown in the following tabulation:

Rake classifier for the production of sands is equipped with sprays

The conveyors are driven for the most part through Pacific gear reduction units.

Three bins, located ahead of the Symons cone crushers, receive 2½- to 4-in., 1½- to 2½-in. and minus 1½-in. material, respectively. The three bins are so arranged that the 2½- to 4-in. material can be re-crushed in the 4-ft. cone, the middle size in the 3-ft. and the finer size will eventually (if desired) be crushed in a 3-ft. cone crusher provided with a fine bowl which is to be installed at some future date. The material going to these bins can come from the primary jaw crusher, be circulated from the bins themselves, or from the main loading bunkers, thus giving an unusual degree of flexibility to meet

Conveyor at top of stockpile is equipped with tripper for distribution of material

NO.	WIDTH	LENGTH	USE
1	30-in.	203-ft.	9-9/16-in. (Horizontal distance) Pit run
2	24-in.	210-ft.	slope (—1½-in. material)
3	24-in.	186-ft.	return belt slope distance
4	24-in.	205-ft.	1½- to 3-in. slope distance
5	24-in.	65-ft.	slope distance
6	24-in.	133-ft.	slope distance
7	24-in.	75-ft.	cobble belt slope distance
8	24-in.	278-ft.	slope for all materials to 3-in.
9	30-in.	233-ft.	loading belt
9-A	30-in.	57-ft.	cross belt for loading gondolas
10	24-in.	——	to batching plant
11	18-in.	Bagged cement to batcher	

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GASOLINE
ELECTRIC
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Built in a range of 18 SIZES 3/8 yd. capacity and Larger

HERE'S WHAT YOUR MONEY BUYS IN A NORTHWEST

- Simplicity of Design
- "feather-touch" Clutch Control
- Cushion Clutch
- Worm Boom Hoist
- Cast Steel Bases
- Helical Gear Drive
- Uniform Pressure Swing Clutches
- Splined Shafting
- Ball and Roller Bearings
- Large Clutches
- Easy Steering
- Crawler Gears Enclosed
- Small Crawler Rollers
- No Nut Cracker Crawler Action
- Chain Drive to Crawlers
- Dual Independent Crowd
- Dipper Sticks tied together at inner end
- Welded Boom and Dipper Sticks
- Demountable Lagging

THESE features can represent the difference between profit and loss to you. These Northwest advantages mean increased speed and output, with lower maintenance costs. Many of them are found on no other machines, and together they offer a combination that makes Northwest the best buy on the market today.

. . . . If it's a real Rock Shovel you won't have to worry about output in dirt!

NORTHWEST

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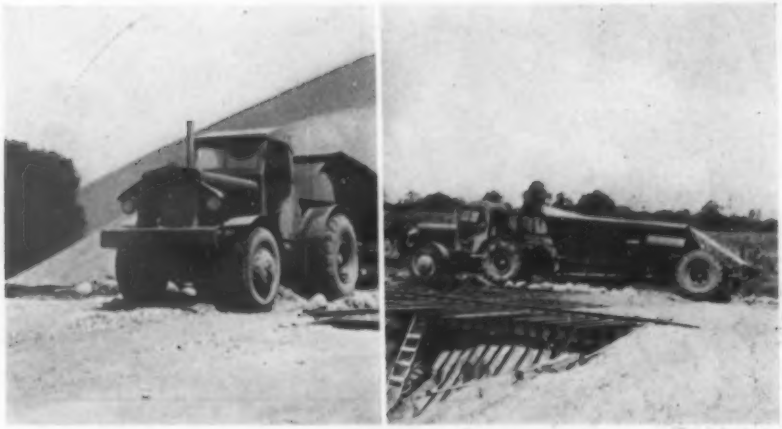


Left: Front end view of haulage unit which moves 16-cu. yd. of material from pit to plant. Right: Dumping the load at the plant hopper

(Continued from page 54)

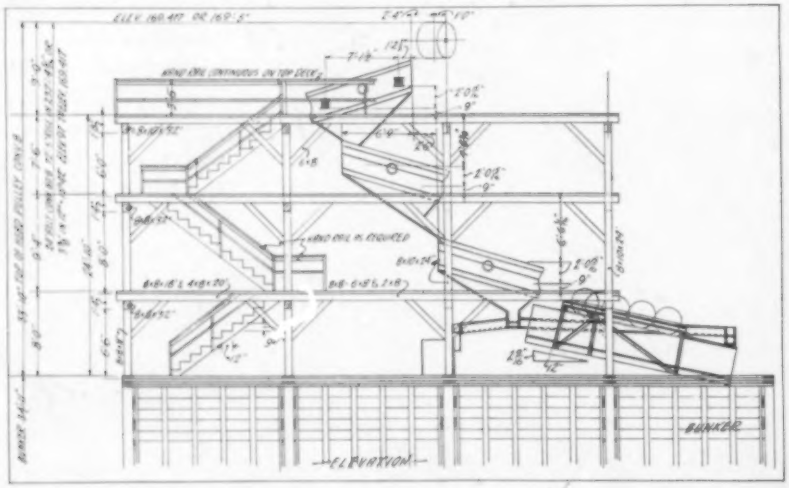
Automatic batcher which provides trucks with any desired combination of sizes

market changes and specifications. Materials going to these three bins are screened dry over a battery of three vibrating screens. The first two act as scalpers and can operate in closed circuit with the crushers as shown in the accompanying drawings. The third is a double decked screen and gives the three sizes of material previously mentioned. They operate dry.

In the final screening plant for the crushed material is a battery of five vibrating screens. Four are double decked. All but one of these screens is PCA but the fifth is a Tyrock.

Track scales are provided for weighing carloads as well as a set of smaller scales for trucks. An Ohio clam shell rig mounted on a standard railroad track is used for miscellaneous handling and loading of materials as well as to assist with switching.

Offices of the Pacific Coast Aggregates, Inc., are in San Francisco, Calif. A. K. Humphries is president; E. J. Goodpastor is vice-president and general manager; R. R. Bush is purchasing agent; George F. Hampton is chief engineer; J. R. Cassidy is general superintendent. Edward Howard is assistant to the chief engineer and also testing engineer; F. J. Brugger is superintendent of the Fair Oaks plant, and W. E. Robertson is in charge of the plant office. The plant was designed by the company's engineering staff and erected under the direction of R. Schurch, millwright and master mechanic.



Details of screening plant design and arrangement of equipment

High Priority Rating

FORTY MANUFACTURERS of mining equipment have been given a limited blanket priority rating to facilitate production of machinery which Priorities Director E. R. Stettinius, Jr., said "is of crucial importance to the defense program."

An A-3 priority rating is provided for all deliveries of materials which appear on the priorities critical list, unless a higher preference rating has been given to some particular item, in which case the higher rating may be applied. There is provision for the extension of the A-3 rating to subcontractors.

The order is applicable to equipment and material entering directly or indirectly, at any stage, into the construction of mining machinery by those producers given the A-3 rating. The order's extension to sub-contractors, it was said, does not cover machinery or equipment used by those sub-contractors in their own manufacturing process.

A limited blanket rating order of the type issued to mining machinery makers is one of the methods used by the OPM priorities division to get needed materials for manufacturers participating in the defense program. Such an order assigns a company one rating which applies to all its contracts for orders for specified materials of which there is or threatens to be a shortage.

Rock Wool Expansion

CARNEY ROCKWOOL CO., Mankato, Minn., plans to install a new 50-in. diameter cupola and a new sizing conveyor for the production of batts. This new unit, which is required to meet increasing demands for rock wool insulation, will double production capacity. As the plant was originally constructed for three units, and all the other accessory equipment was installed when the plant was built, this second unit will cost only approximately $5000. The company's sales are divided into four distinct units: the retail, blowing wool, industrial materials, and batts for new construction. Ira Nelson, secretary of the company, heads the retail division; J. P. McGovern heads the blowing and industrial division.

"GULF Engineering Service is helping increase our output in three ways"

— says this Superintendent

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Permanente Improvements

(Continued from page 41)

Intergrating and gas flow meter	Foxboro Co.
Recording exist stack instruments	Leeds & Northrup Co.
Kiln r.p.m.	Weston Electric Instrument Co.
Draft gauge, indicating	Hayes Corp.
Gas analysis equipment	E. W. Bacharach Co. and Siemens & Halske Co. (German)

Clinker Grinding Changes

For clinker grinding a two-stage grinding set-up is being installed. The assembly will consist of a 9½- x 10-ft. F. L. Smidth & Co. ball mill followed by an 8-ft. x 36-ft. tube mill of the same make. To accommodate the new mills the end of the mill building is being extended slightly. The equipment in this department then tabulates as follows:

MILL NO.	SIZE	MAKE	USE
10 Old	9½- x 10-ft.	Traylor	Primary Clinker
11 Old	8 - x 40-ft.	Traylor	Secondary with above mill
12 Old	9½- x 10-ft.	Allis-Chalmers	Primary Clinker
13 Old	8 - x 40-ft.	Allis-Chalmers	Secondary clinker with Mill No. 12
14 Old	8 - x 36-ft. Unidan	F. L. Smidth	Clinker
15 Old	8 - x 36-ft. Unidan	F. L. Smidth	Clinker
16 New	9½- x 10-ft.	F. L. Smidth	Primary Clinker
17 New	8 - x 36-ft.	F. L. Smidth	Secondary clinker with Mill No. 16

The Allis-Chalmers and Traylor clinker grinding units are served with Fuller-Kinyon pumps and Raymond Whizzer separators (six 16-ft. machines in all).

The F. L. Smidth equipment uses FLS multi-stage air separators. The Raymond separators are of the double Whizzer type. By moving damper from the outside, while the separator is in operation, the surface area of the products can be varied from that required for standard cement to that for the high-early strength cements. This variation in specific surface ranges from 1700 to 2800 sq. cm. per gram.

Fuller-Kinyon cement pumps with rotary compressors are used for conveying from mills to separators, separators to silos, silos to packers, bulk loading, etc. Six Fuller rotary air compressors are provided.

In the clinker grinding department water sprays play on the outside of the grinding mills. The waste water falls to an area below and is drained to waste.

Magnesium Plant

The original design for the new magnesium plant called for four units using the process developed by Dr. Hansgirg, who is at Permanente supervising the installation. The four unit plant was to cost $13,000,000 and its output would be six times the total United States production of magnesium in 1938.

Brucite will be hauled by rail from Luning, Nevada, from the deposits operated by Basic Magnesium, Inc., Cleveland, Ohio. In the processing of the magnesium ore a tie-up will be made with the cement kilns whereby considerable savings in fuel will be possible.

When the magnesium project was started there was a shifting upwards of the personnel. Harry Davis, former superintendent of the cement plant, is now general superintendent of both plants. A. J. Anderson is cement plant superintendent; C. A. Fisher is assistant to Mr. Anderson; Joe Rowan is general purchasing agent for both plants; M. Erkid is purchasing agent for the cement plant, and H. M. Peckenpaugh is purchasing agent for the magnesium plant. George Billingsley is chief chemist for the cement plant; C. T. DeLude is chief chemist for the magnesium plant, and W. O. Wetmore is chief metallurgist for the magnesium plant.

Personnel

The executive officers and technical staff are: Henry J. Kaiser, president; E. H. Heller, vice-president; E. E. Trefethen, Jr., vice-president; Henry J. Kaiser, Jr., secretary; C. A. Shea, treasurer; Ralph Knight, chief engineer; and J. E. Winter, chief draftsman.

Consultants on both cement plant and magnesium plant are: Dr. Raymond E. Davis, University of California; Dr. L. H. Duschak, University of California; Dr. Ralph Hultgren, University of California; Dr. C. F. Tolman, Stanford University; and Dr. O. Lellup, San Francisco.

Grinding Pebbles

Because of curtailed imports of items in the classification "flints, flints and flintstones, unground," which include French and Danish flint pebbles for grinding and ceramic purposes and Belgian silex, foreign pebbles are now being replaced largely by material produced domestically.

After the fall of France no imports of these materials were obtained from Europe, except one ton shipped from the United Kingdom. Total imports during the first 6 months of 1940 amounted to 1,877 short tons having a foreign value of $24,530 compared with the total imports in 1939 (12 months) of 11,987 short tons. During the scond half of 1940 virtually all of the imports, aggregating 963 short tons worth $7,867, were from Newfoundland.

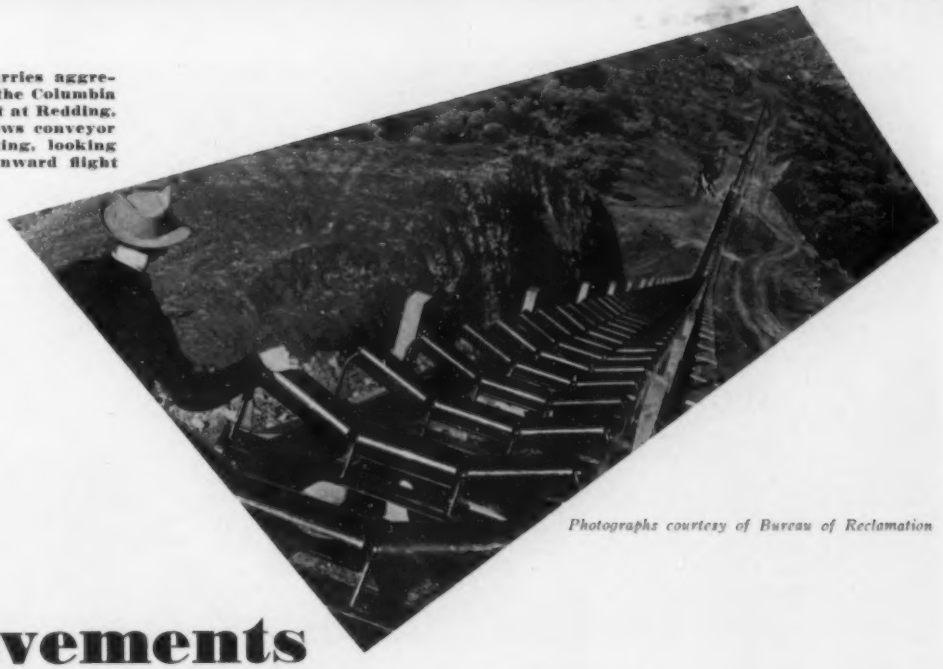
The range of pebble sizes supplied by an importer of French grinding media, however, may be of interest as an indication of commercial grades on the market:

Size	Millimeters or Inches	
0	30- 40	1¼-1¾
C	40- 60	1¾-2½
B	50- 70	2 -2¾
A	60- 80	2½-3¼
D	80-100	3¼-4
E	100-130	4 -5

The pebbles analyzed 98.2 percent silica and had a specific gravity of 2.78. The shapes vary from nearly round to elliptical.

Efforts to find some nearby sources of suitable substitutes for imported pebbles and liners appear to have been successful. One large importing firm, after having investigated possible deposits in the United States, Canada, and Newfoundland, now supplies its former users of French and Danish pebbles and Belgian silex with granite grinding cubes and lining blocks and silica quartz pebbles from North Carolina or grinding pebbles from Newfoundland, depending upon the type of material to be ground. According to Vice Consul Charles C. Sundell, St. Johns, Newfoundland, the gathering of grinding pebbles was begun in the Manuels area of Newfoundland in 1940. The pebbles, picked up from the beaches, ranged in diameter from 1 to 5 in. It was estimated that by December 1 about 1,000 tons had been gathered, most of which were shipped to the United States.

A domestic true flint pebble also has been tested. The North Carolina cubes, which are tumbled to remove edges, are tougher than the formerly imported product and contain somewhat more iron. Because of their greater durability, however, no more iron is released into the mill than formerly.—*Bureau of Mines.*



Ten-mile belt conveyor carries aggregates to Shasta dam from the Columbia Construction Co., Inc., plant at Redding, Calif., to Coram. View shows conveyor before application of belting, looking toward dam on long downward flight

Photographs courtesy of Bureau of Reclamation

Improvements at Shasta Dam Aggregates Plant

Grind sand in rod mills to disintegrate unsound particles. Add third bowl classifier and install larger primary jaw crusher

SINCE the Central Valley project is a concrete construction job of great size, any description of it must have as a major subject the preparation of the aggregate and concrete going into the huge structures.

The first major job was to find suitable sand and gravel deposits near the two great dams; Shasta and Friant. For a period of four continuous years prior to 1935 the Bureau of Reclamation examined 60 deposits within a radius of 100 miles from the dam site. Numerous test pits were dug and the materials subjected to every conceivable test.

Concrete was made from the aggregates in different proportions with test cylinders up to 3-ft. in diameter being used for compression. Sodium sulphate tests as well as preparation of thin sections for microscopic work was done on some of the gravels and sand.

Recent Plant Changes

After selection of suitable deposits, a contract was given to the Columbia Construction Co. for the aggregate and they built a 1200 tons per hour washing and screening plant near Redding, Calif. This plant has been previously described in ROCK PRODUCTS, October, 1939, pp. 24-36.

Changes in this plant, due to the stringent specifications, were not as numerous as might be expected, mainly because of the high degree of engineering information available on the character of the deposit and the materials in it. However, it was found advantageous to install a larger jaw crusher to permit using as much of the available larger sized materials as possible. For this work a 4-ft. Farrel-Bacon primary crusher was installed.

Sand is treated in an 8- x 12-ft. Marcy rod mill for the purpose of disintegrating unsound sand particles. It was found that the two original Dorr classifiers did not retain enough fine sand to meet specifications so a third Dorr bowl classifier (25-ft. diameter bowl) was installed to recover more of the finer sands.

In the concrete mixing it has been aimed to keep the temperature of the mix as low as possible; 85 deg. F. at Shasta, 72 deg. F. at Friant. The summer months around Kennett are exceptionally hot so sprays have been installed on the coarser aggregate piles in an attempt to help this condition. The sprays give a very fine mist and use very little water.

Conveyors Cut Haulage Cost

The 10-mile long belt conveyor system has worked out very well. With an installation cost of $1,460,000, the write-off on the investment is 14.6c per ton of aggregate. The Government pays the contractor 40c for processing the material and 20c per ton for transportation. This cost for transportation is said to be about one-half what it would have been had railroad haulage been used.

Inspection of the belts on the transportation system show very little wear, and they should have a real salvage value after completion of the project. Some difficulty was experienced with the down-hill flights of the conveyor system during the wet season as the conveyors operate in the open. The difficulty was that the belt would continue to slip over the head and tail pulley when power was stopped. This was corrected by corrugated rubber covers placed over the vital pulleys.

The belts travel at such a high speed (550 ft. per min.) that the "throw" of the coarse gravel from conveyor to conveyor has resulted in some breakage of the coarser aggregates. This breakage results in a

Shasta dam aggregates plant. View of mill, conveyor belts and trestles as seen at point over crusher. Raw storage conveyor (1) and (2) seen at the right, mill (3) in the center, and processed sand conveyors (4) at left. Blended sand conveyor (6) leading from tunnel below stockpile location (5) at left. Rock conveyor (7) may be seen between blended sand conveyor and mill building

trifle extra rock dust being included with the mix which could increase the water ratios in the concrete. By installing baffles at the junctions of the conveyor system the amount of breakage has been materially reduced.

Concrete Mixing Plant

The central concrete mixing plant, using the Johnson system, has also been described previously. The plant consists of five 4-cu. yd. mixers capable of turning out close to 10,000 cu. yd. of concrete per 24 hours.

In this plant, which is a marvel of automatic equipment, sand moisture meters have been installed so that information on the approximate amount of water in the sand is available. A bank of so-called "Hold Switches" has been installed. This bank of switches enables the operator to dump any gate while holding up the others.

Tempering water switches have been installed so that consistency of the concrete can be corrected without leaving the control board. These switches are referred to by the operators as the "Water Goosing Switch." Fans for the control of dust in the mixing plant have been installed and the control room is now air conditioned.

The oil controls for dumping mixers have been taken out and replaced by straight air control. Some changes have been made in the air control system whereby the air is brought closer to the place of use. This results in a saving of a few seconds in the total mixing time.

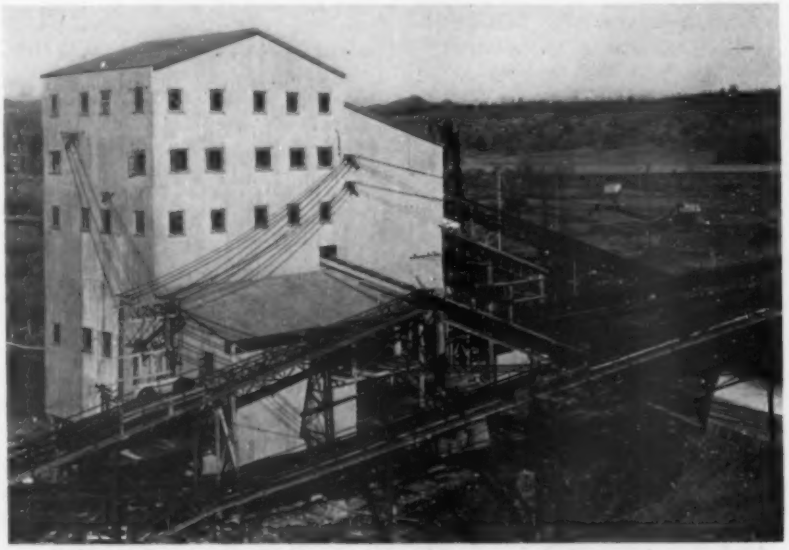
Water collector cones were redesigned so that they would discharge quicker to the Koehring heavy duty mixers. This was cut from 30 seconds to 13. Hard surfacing with electric welding equipment of the interior of chutes, bins, mixes, etc., is practiced so as to keep the plant operating without delays. Electric vibrators have been installed on some of the hoppers, replacing air vibrators.

The changes in the plant have been all towards speeding up the various phases of the operation. A cycle requires about 2 min. 21 seconds. Mechanically the plant works well with a very high operating time. Most of the repair jobs to the complicated control system can be made on the run; the plant can be controlled manually if needed. About once a month a 24-hour shut down is made to make major repairs.

A high percentage of the 6,000,000 cu. yd. of concrete in the dam will be of mass concrete, using 6-in. maximum cobbles. A rigid system of inspection and testing is carried on all three shifts. Tests on cylinders are made at 7, 28 and 90-day intervals.

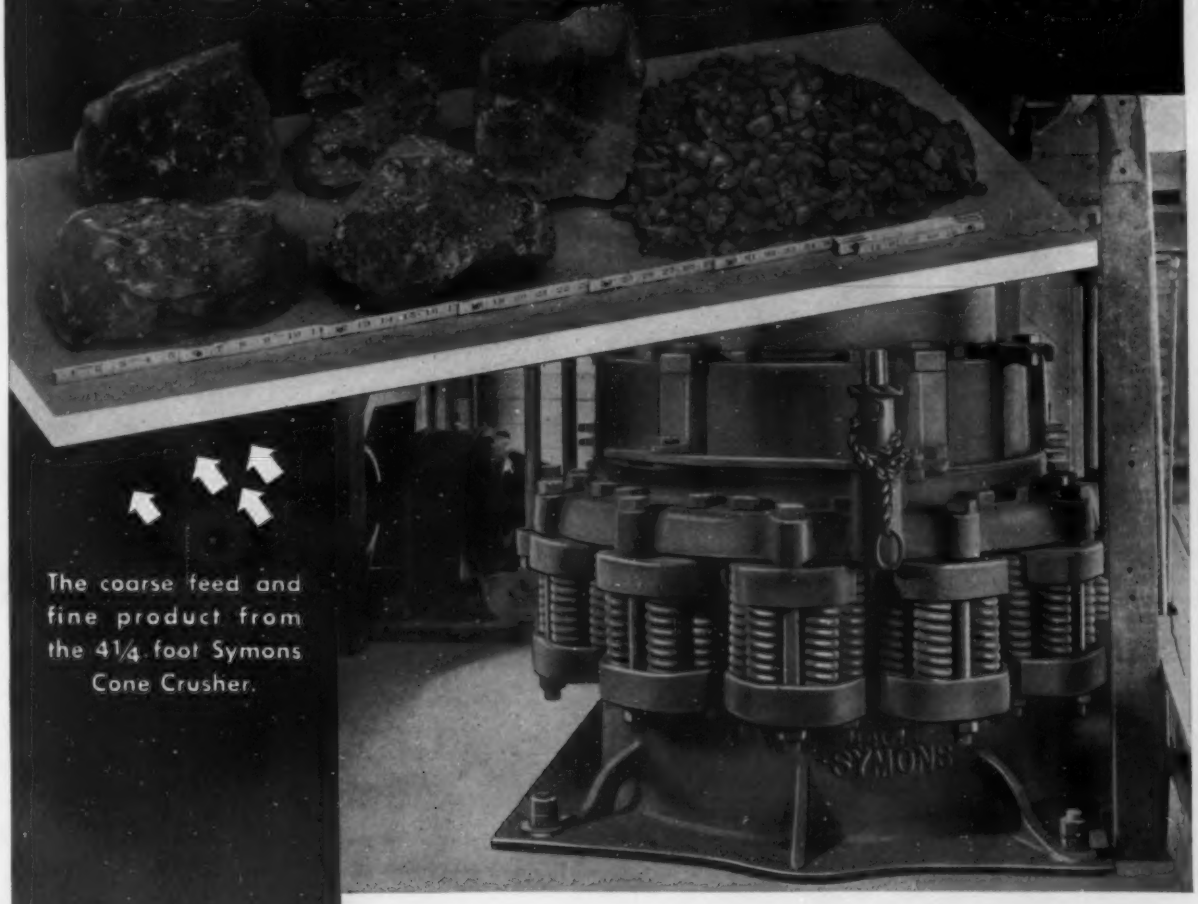
The design of the concrete mix is

(Continued on page 66)



Mill and conveyor belt system view from trestle over blended sand stockpiles. In the distance may be seen the conveyor which brings raw material from pit

MAKING A 3/4 INCH PRODUCT FROM AN 8 INCH FEED OF TRAP ROCK



The coarse feed and fine product from the 4 1/4 foot Symons Cone Crusher.

Here is another outstanding example of Symons Cone Crusher performance. As with most quarries in North Jersey engaged in crushing trap rock, the Orange Quarry Company of West Orange uses Symons Cones for reduction crushing. The satisfactory performance of a 4 foot Cone, installed in 1935, led to the installation of a second Cone, a 4 1/4 foot with coarse bowl suitable for reducing the material from the primary jaw crusher. This Cone takes a feed of 6 to 8 inches and makes a minus 3/4 inch product. The Symons 4 1/4 foot followed by a Short Head Cone is the ideal combination for producing finely crushed materials in big capacity and at low cost.

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SYMONS CONE CRUSHERS

"White Gold" From Mother Lode

Calaveras Cement Co., located in the famous Mother Lode gold district of California is supplying 50 percent of the cement for Friant dam

General view of plant, showing silos for finished cement

SITUATED in the foothills of the great gold mining district of California, the Calaveras Cement Co., San Andreas, Calif., is an essential part of the Central Valley project as it is furnishing nearly 50 percent of the cement for the Friant dam.

The Calaveras Cement Company will soon complete an 800,000-bbl. cement contract which was awarded in May, 1940. This contract forms part of the 1,650,000 bbl. low-heat cement requirement for the Friant Dam of the Central Valley Water Project.

The manufacturing facilities are located on a 3000-acre site in the foothills of the great "Mother Lode" gold mining district. Construction was completed and operation of the plant started in 1926. During the following two years in excess of 600,000 bbl. of cement was furnished to the East Bay Municipal Water district for the construction of Pardee Dam, located near Valley Spring on the Mokelumne River.

Since that time the plant has operated continuously and produced all types of gray Portland Cement, puzzolan cement, and a white cement of which latter type they are the only producers on the Western Coast.

One of the most recent changes was from oil fuel to gas. For this purpose the Pacific Gas and Electric Co. has piped natural gas from Lodi, Calif., a distance of some 50 miles. Gas is delivered to the kilns at 17 p.s.i., and only one burner is used per kiln. This burner is of special design and does not require any auxiliary air devices. Air is supplied at atmospheric pressure and serves the burner on the same principle as the old laboratory bunsen burner. It is said that the fuel cost per barrel of cement is less for gas than for oil, and that much less dust is sent to the stack because of the easier flame.

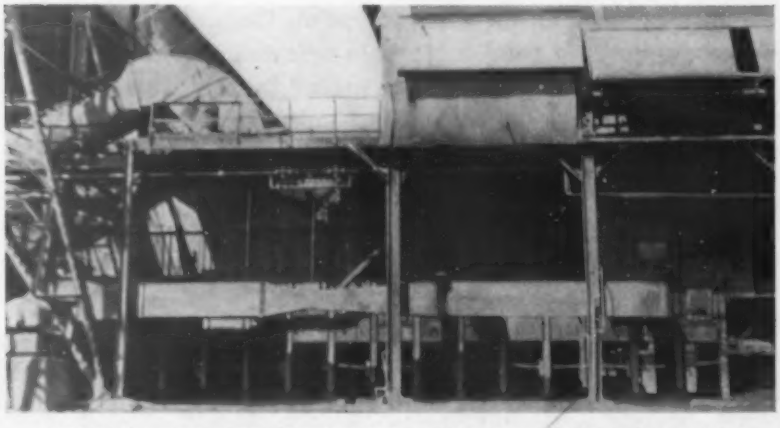
Single gas burner on kiln requires no auxiliary air equipment

A second change has been the installation of Wilfley pumps for handling slurry. Formerly slurry was pumped by automatically operated chambers, that when filled were expelled by air pressure. In the chemical industry the device is called an "acid Egg" or "Pressure case," or "Monte Ju." Smoother and more economical pumping as well as the advantage of using the pumps for blending from tank to tank are maintained.

For manufacturing the wet process is employed and the plant flow consists of approximately the following units:

OPERATION	No. OF UNITS	TYPE OF MACHINE
Primary Reduction	1	42-in. Superior McCully Crusher
Secondary Reduction	2	10-in. Superior McCully Crusher
Tertiary Reduction	1	Allis-Chalmers 424 Pulverator
Final Reduction	2	8- x 7- x 26-ft. Allis-Chalmers tube mills
Slurry Storage	8	20- x 40-ft. concrete tanks
and Correction	2	18- x 20-ft. concrete, correction tanks
Burning Clinker	2	11- x 10- x 240-ft. Allis-Chalmers rotary kilns, gas fired
Cooling	1-1	Lee Process Cooler, rotary cooler
Finish Grinding	3	8- x 26-ft. Allis-Chalmers tube mills
Dust Collection		Allis-Chalmers
Cement Storage	8	Concrete silos, 90,000 bbl. capacity

(Continued on page 66)



One of the more recent improvements at Calaveras is the clinker cooler

The Williams "SLUGGER" Crusher and Pulverizer Handles "ONE MAN" Stone • Saves Sledging

Also Makes 1¼", ¾" or Agricultural Limestone in One Operation

CUTAWAY VIEW of "Slugger" showing heavy duty hammers, liners and discs.

By reducing large rock to 1¼", ¾" or agricultural limestone in one operation, the "Slugger" has enabled operators to produce these sizes at a low cost per ton and with small investment.

Features include—Manganese steel hammers, heavy duty SKF bearings, adjustable breaker plate, hammer adjustments overcome wear, economical to operate.

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OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD
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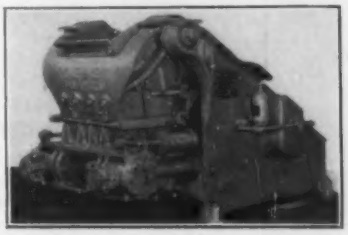
It's a "Seller's Market"

Get ready now to deliver the goods



Cash-in now on the heavy demand for materials. A fast, silent, smooth Kue-Ken Balanced Crusher will help you speed up production and at the same time cut your costs. You can profit two ways.

One plant using a Kue-Ken Crusher reduces a 55 ton car of rock in 1/6th the time it needed with the crusher previously on the job. Power load is only 1 H.P. more. Another owner gets five times longer jaw plate life than with previous crusher on the same rock. Case after case like this prove that you too can get more for your money with a Kue-Ken Balanced Crusher on the job.

A postcard will get you full particulars about this amazing crusher. Show you how to cut costs and increase production at the same time. Write today . . . there's no obligation.

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FOR CENTRAL VALLEY AGGREGATES

MARCY ROD MILLS

MEET TOUGH SPECIFICATION REQUIREMENTS

Processed sand for use in the Central Valley Project had to meet exacting specifications laid down by the U. S. Reclamation Bureau. Test grinds made in a Marcy Rod Mill were approved. An 8' x 10' Marcy Open End Mill was purchased by Columbia Construction Co. and installed at Shasta Dam. This mill is doing a thoroly satisfactory job. Long widely known in ore milling, Marcy Open End Ball and Rod Mills are increasing in favor in many other fields.

When writing for catalog, please state your reduction problem.

The MINE and SMELTER SUPPLY Co.
Main Office, DENVER, COLO.
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the installation of a Lee cooler on one of the kilns. The second kiln still uses the rotary cooler.

The Calaveras Cement Co. is noteworthy as being one of the few plants in North America that manufacture a white portland cement. Selected limestone from its own quarries is used. An especially white clay from Ione, Calif., about 25 miles away, is used. This burns white and gives a very excellent product.

With the addition of contemplated improvements in the near future, it is expected that the Calaveras plant will be the equivalent, in terms of modern cement manufacture, of any plant now operating in the western United States.

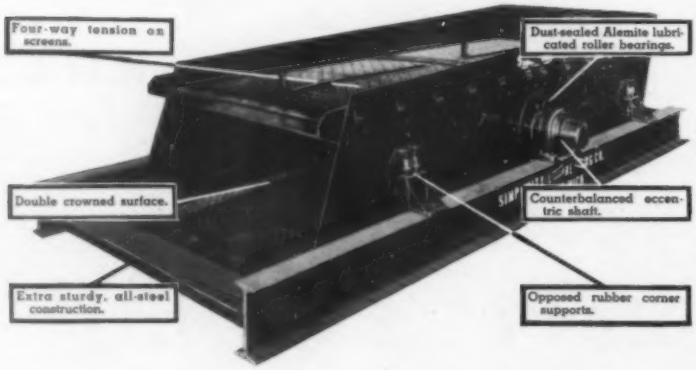
Since its inception, the Calaveras Cement Company has continued under the management of the present officers: Wm. Wallace Mein, president; Arthur B. Shelby, vice-president and general manager; H. C. Maginn, vice-president in charge of sales and traffic; William Wallace Mein, Jr., vice-president; J. Tedesco, secretary; J. B. Smith, treasurer. The operating personnel are G. B. Poore, Jr., plant superintendent, and M. S. Heard, chief chemist.

CLEANER MATERIALS MORE ACCURATE SIZING

—SAY CUSTOMERS OF LARGE WESTERN FIRM USING *Simplicity* SCREENS

Recently the head of a large Aggregate Producing company in the West made this statement.—"I've always understood that Simplicity Gyrating Screens were good, but I didn't realize how good they are until after I installed that 4'x 10' triple deck screen in one of my plants. No other screen is one, two, three, when compared to a Simplicity. Hardly a day goes by without some one of my customers making some comment about how perfectly sized and cleaned my material now is. From now on its Simplicity screens for me—the best aggregate screen on the market."

You, too, can insure better cleaned, more accurately sized aggregates by installing a Simplicity Gyrating Screen. Write today for complete facts and prices.



Simplicity

ENGINEERING COMPANY · DURAND MICH.

Shasta Dam

(Continued from page 62)

arranged so as to give maximum economy, high stress, durability, workability, and at the same time use all the materials in about the same proportions as produced at the washing plant. Slumps are maintained at from 1.75 to 2¼-in., the variation being due to weather conditions (high winter rainfall) in the area. The net water cement ratio has been found to be 0.6 by weight to give best results on the average. Mass concrete with 6-in. cobbles have a sand and gravel to cement ratio of 9½ to 1. Gravel-sand ratio varies from 1 to 2.75 to 2.95.

The concrete in the dam is poured in 50-ft sq. blocks. The blocks are raised about 5-ft. per pour at about 72-hr. intervals. Forms are removed after 48 hours. Shortly before a new pour is started, the top is sand-blasted, washed and thoroughly cleaned with sponges. Then a layer of grout about 2-in. thick is poured on the surface before dumping the mass concrete. Concrete is brought to the block by one of the three cableways in 8 cu. yd. buckets, usually at the rate of 100 cu. yd. per hour. About one-third of the total concrete is now in place.

Cement Rates to Panama

PACIFIC COAST portland cement companies have an unfavorable water rate to Panama in comparison with rates quoted by the Maritime Commission from Gulf ports and the Eastern seaboard. The rate from San Francisco is $5.50 per long ton; from Los Angeles, $4.90 and from Seattle at $6.80. Rates from Gulf ports are $4 and between Norfolk and Boston they are $4.10 to $4.85. The figures were made known in connection with bids for 6,000,000 bbl. for the third locks project at the Panama Canal which were opened recently in Washington by the Panama Canal Commission.

Resumes Operation

MONOLITH PORTLAND MIDWEST CO. has started up operations at its Laramie, Wyo., plant after a three-week shut-down for repairs and maintenance, according to an announcement by F. J. Anderson, superintendent. Most of the employes took their vacations during this period. Capacity operations will be resumed.

Install Diesel Engine

THE MONARCH CEMENT CO., Humboldt, Kans., has installed a Diesel-electric engine in its quarry. This unit is similar to the one that the company has been using for yard work.

CONCRETE PRODUCTS AND CEMENT PRODUCTS

Making Concrete Block by Straight-Line Production

Cleveland Builders Supply Co., Cleveland, Ohio, operates four block machines with a daily production of 25,000 block. Picture does not show fourth machine, to the right

MILLIONS for Defense

Vibrapacs are turning out concrete blocks by the millions in various part of the country and in the Panama Canal Zone for Defense housing and building projects as well as for private residences, industrial and public building. When big contracts come up demanding speed, quality and economical production, the leaders in the Concrete Products Industry know that they can depend on Besser Vibrapacs.

These leaders in the industry KNOW—

—about **increased** plain pallet economy on the Vibrapac.

—about advantages of this simple Fully Automatic machine for fast production and dependable operation.

—about one man offbearing reducing cost two-thirds.

—about perfect dimensioned Fully Pressed Top blocks.

—about undirectional vibration cushioned with rubber.

—about selective density and textures for various requirements.

Sometimes it is a first Vibrapac for greatly increased production. Often it is a second or a third Vibrapac as production demands grow—but, it MUST be a Vibrapac to get these advantages.

Besser Super Automatic Plain Pallet Vibrapac with Mixer and Skip Loader. Capacity 600 8"x8"x16" per hour made 3 at a time on one steel pallet. Smaller units made in larger quantities on the same pallets.

Undirectional vibration under Flam patents (other patents pending) was employed to make the first vibrated blocks ever produced commercially. The Besser Vibrapac combines undirectional vibration with the exclusive Besser Plain Pallet principle. Users of these machines are fully protected under Besser and Flam patents.

BESSER PLAIN PALLET STRIPPERS

A Besser Plain Pallet Stripper For Every Need

TAMPERS	Besser Super Automatic	8 Hr. Capacity 3120
	Besser Victory Automatic	8 Hr. Capacity 2160
	Besser Semi-Automatic	8 Hr. Capacity 1680
	Besser Champion, Power Operated,	8 Hr. Capacity 1000 to 1200
	Besser Multi-Mold, Hand Operated,	8 Hr. Capacity 250 to 350
VIBRATORS	Besser Super Automatic Vibrapac	8 Hr. Capacity 4800
	Besser Victory Automatic Vibrapac	8 Hr. Capacity 2160
	Besser Master Vibrapac, Hand Operated,	8 Hr. Capacity 800

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Complete Equipment for Concrete Products Plants

THE SAVING IN PALLET COST WILL PAY FOR A BESSER VIBRAPAC PLAIN PALLET STRIPPER

Automobile driven into 96-in. diameter concrete pipe gives some idea of the size of the products made by Mid-Atlantic Concrete Pipe & Products Corp. New crane to the right and mixer in the background

Pipe and Block For Defense

Rebuild Mid-Atlantic Concrete Pipe and Products Corp. plant to meet heavy demands for army and navy structures and airports

By BROR NORDBERG

NORFOLK, Va., has been a beehive of construction activity ever since the national defense building program started. Concrete masonry construction has reached a peak, with constantly increasing demands for use in barracks, officers' quarters and other buildings at the U. S. Naval base. Concrete pipe for sewage lines, airport drainage, etc., is also being moved in large quantities.

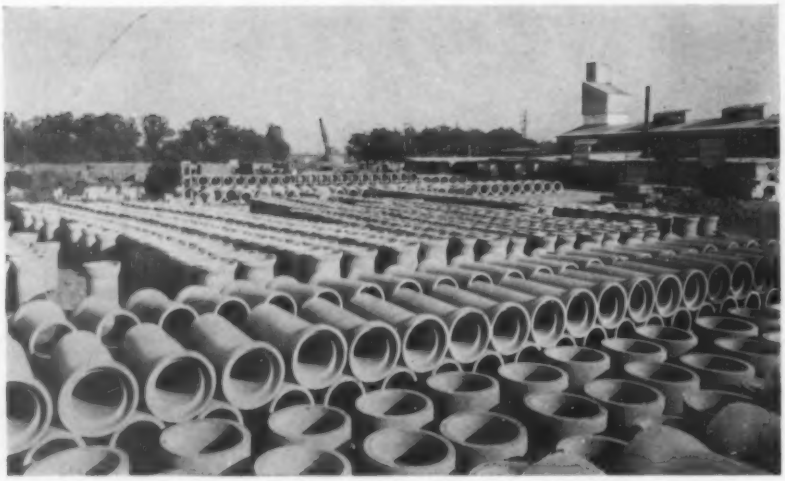
Mid-Atlantic Concrete Pipe and Products Corp., largest manufacturer of concrete block and concrete pipe in the city, is supplying most of the requirements. Its sales volume of over 2,000,000 concrete block in 1940 was almost entirely identified with defense building. To date over 1000 cinder block buildings have been built for governmental agencies. The company is also moving most of its capacity for concrete pipe to defense projects, but over a wider area in the State. In 1941, most of its production is being tagged for the same purposes.

To produce present requirements for Norfolk, capacity was geared up in advance. Early in 1940 much of the plant was rebuilt. Principal products manufactured are lightweight cinder concrete block, 8- x 8- x 16-in. and fractions and 4- to 96-in. diameter concrete pipe.

Plant and Equipment

As the plant is a long structure, the equipment arrangement and facilities to handle materials had to be made to fit certain restricted conditions when the building was enlarged. Machine-made pipe up to 30-in. diameter is manufactured on two tamping machines located near one end of the building. One machine is a Turk-McKenzie, the other an Easterley.

Left: One of the new vibrating type block machines. Right: Charging one of three mixers for block manufacture, using measuring lorry from bin in background



Showing immense stockpile of concrete pipe with plant in right background

Cinder block are manufactured at the other end of the plant where three machines are arranged in a row. Two of them are Stearns No. 7 Joltcretes and the third is a Stearns automatic tamper which manufactures 4-in. and 12-in. block. Main production is on the two vibrating machines which have a capacity of 7000 block in 12 hours. Two of the smaller capacity machines were considered preferable to a single one of larger capacity for interchangeability of parts, as a reserve against complete breakdown, and to have a more flexible capacity.

Pipe from 30- to 96-in. diameter are all hand cast, and are vibrated parts. Aggregates for machine-made pipe are ⅝-in. minus and ⅜-in. minus crushed granite, stockpiled in open bins alongside the building near the pipe machines. Each of the mixers is on the floor level with separate skips to elevate the concrete into the machine feed hoppers. Aggregates for poured-vibrated pipe are stockpiled near the paving mixer outside the building and are handled by wheelbarrow. For these pipe, a Virginia No. 7 gravel and Petersburg natural sand are preferred as aggregates. Experience has been that the natural, rounded particles work better under vibration, in a concrete mix. These pipe are made with a 2¼-in. slump concrete, and a semi-dry mix is used for machine-made pipe and cinder block. All cement used is in sacks.

Above: Looking down aisle in pipe manufacturing department, showing pipe machines on the right and curing kilns on the left

in molds by Jackson electric vibrators outside the main building, where a 1-cu. yd. paving mixer and suitable ramps have been set up for the purpose.

Each machine in the plant has an individual concrete mixer serving it. They are all Besser 2-bag mixers, standardized for interchangeable

Cinder Crushing and Grading

Special crushing and grading equipment and a separate bin and proportioning equipment for cinders were installed in 1940. Adjacent to the block machine end of the building, cinders, purchased locally from power plants, are delivered by rail to open storage at the plant. A portable Barber-Greene belt conveyor stockpiles the cinders alongside the cinder crushing equipment, direct from the cars.

At present two carloads of cinders are crushed daily for concrete block manufacture. Cinders are processed through a New Holland cinder crushing plant consisting of a hammer mill, two sets of 20-in. crushing rolls, two 3- x 7-ft. vibrating screens, a Link-Belt bucket elevator and a magnetic separator to cast out tramp iron ahead of the hammer mill.

Cinders fed into the boot of the elevator are scalped first, oversize is put through the hammer mill and oversizes from the finish screen are reduced through the rolls. Two products, ⅜- to ¼-in. and ¼-in. minus with the fines are stored in a new 2-compartment, 60-ton Butler bin. Accurate proportions of both grades of cinders are measured in a lory which is manually-propelled on a monorail to charge either of the three concrete mixers.

Pipe, block and miscellaneous concrete products are cured by low pressure steam. Of eleven tightly-sealed

(Continued on page 74)

Below: Arrangement for crushing cinders used in block manufacture. There is a hammer mill and two sets of rolls with vibrating screens

Increase plant capacity of Austin Crabbs Incorporated without sacrificing efficiency of equipment layout. Make concrete block, cast stone, lintels, and joists

Attractive plant and office building arranged for efficient production of concrete products

From Autos to Concrete Units

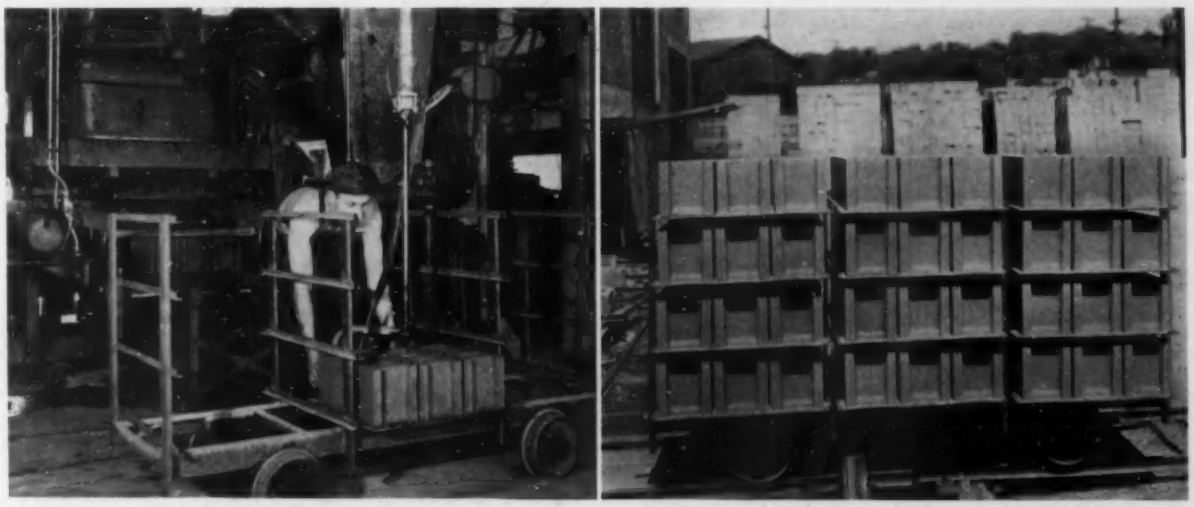
BACK IN THE EARLY DAYS when it was almost necessary to have a mechanic come along with the automobile as part of the tool kit, Austin Crabbs was identified as an engineer with the automotive industry. Today he heads the well-known firm of Austin Crabbs Incorporated, Davenport, Iowa, producer of a complete line of concrete products. The automotive industry's loss has proved to be a very decided gain for the concrete masonry manufacturing industry.

Starting in 1914 as the Cement Products Co., the plant was moved in 1917 to a new location and in 1936, the present name was adopted. An abandoned shed on railroad property was the first location, and one of the first improvements was a power tamper. Strange as it may seem, this machine may be given credit for bringing the present owners into the business. A tamper in those days was an eccentric mechanism and likely to quit just when customers were clamoring hardest for blocks, to say nothing of the times when governor weights would fly off across the room and everyone would run for shelter. It was this need for someone who knew something about machinery that brought Austin Crabbs into the business.

Built of concrete masonry, the original factory at the present location was a one-story building 31 by 52 ft., with shed rooms for steam curing to one side. The plant was rebuilt in 1924 by going up two stories and adding to both sides of the original shop. It is now 52 ft. by 138 ft. with offices, lockers, and the machine shop on the second floor in front.

Efficient Plant Layout

It is an efficient layout with the machinery room occupying the center of the plant with curing rooms at each side, thus reducing total distance traveled for finished products. There are four double track curing rooms on each side, 8- x 43-ft., with a total capacity of 7000 standard block, with insulated arched ceilings and a flat slab floor above. These



Left: Operator transferring block from high production machine by means of air-operated off-bearer mechanism. Right: Specially-designed rack cars ready to be moved into position on transfer track to the storage yard

A corner of the cast stone floor showing some of the typical work done in this part of the plant

Austin Crabbs, left, and his son, Jack Crabbs with a display of some of the products made by this company

floors above the curing rooms are used for cast stone manufacture and serve to keep the curing rooms entirely inside the building, giving better control of temperature and humidity.

Equipment includes a new Besser Super Vibrapac, an Anchor, Jr. tamping machine, a Dunn face down unit, a Multiplex chimney block machine, a Dunbrik machine, and an Ideal chimney block and brick outfit. The principal producing unit today, located in the center of the machinery room, is the Besser Automatic Super Vibrapac unit making 600 blocks per hour or 4500 a day. The other machines have a capacity equivalent to 1000 standard 8- x 8- x 16-in. block. The Besser mold boxes were specially designed for this plant, one of the chief features incorporated being a center core smaller than the two end cores to give added strength in the wall between vertical joints.

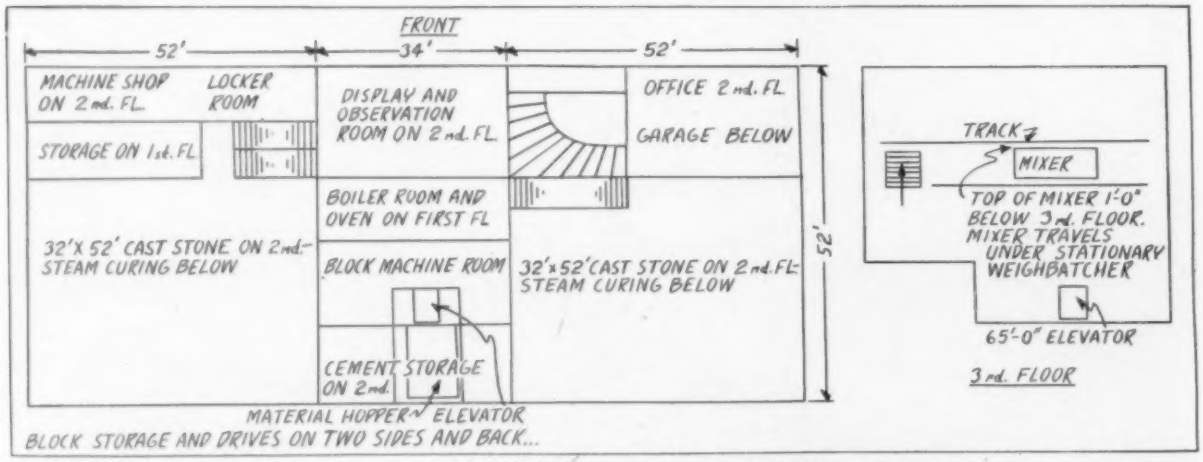
Block are taken from the machine, three at a time, on plain pallets and placed on cars by one man, using an air hoist. Two men are used to move the loaded racks to the curing room, to supply pallets and empty cars to the machine, and for miscellaneous work in the shop. Special blocks are made on the two smaller machines with power tampers and feeders. In addition to 4-, 6-, 8-, 10-, and 12-in. wide block, a 15¾-in. L-shaped block, three types of face, and tank block are made.

Hoppers of the three block machines are in one row to receive the concrete mix from an overhead 50-cu. ft. mixer traveling on rails and propelled by electric power. Sand and gravel are secured locally and Pottsco lightweight aggregate is shipped in by cars from the Chicago district plant of the Celotex Corporation. Aggregates are delivered to the plant by truck and elevated to bins above the mixer, the bottom of these bins being about 30 ft. above the machine room floor. Proportioning is done through the use of a stationary dial-scale weigh-batcher. All this equipment, including storage bins, is entirely housed-in and thus the regular heat in the building in Winter travels up around the steel bins and any aggregate that may be frozen when received, quickly thaws out. Cement, which is stored on one of the lower levels in bags, is raised to the mixer platform automatically by an electric elevator fed automatically by a roller conveyor. A bag of cement dropping on a spring-supported platform at the top, stops the elevator and when picked up, the elevator again starts up with another bag.

Make Cast Stone, Joists, Lintels and Sills

At the rear of the machine room on a balcony connecting the two cast stone floors, is a smaller mixer, which is charged through a chute from the main weigh-batcher. This mixer is

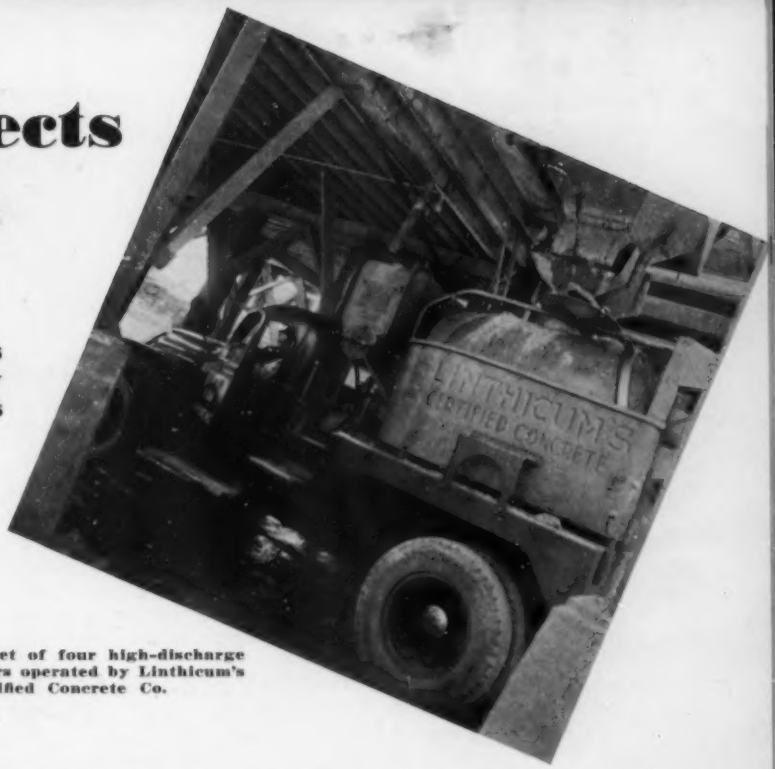
(Continued on page 74)



Layout of the three floors. Note the very efficient arrangement of equipment to eliminate unnecessary travel about the plant keeping all units under one roof, including aggregates

Housing Projects Pull Business

Certified Concrete Co. constructs elevated railroad spur to simplify handling of cement and aggregates



One of a fleet of four high-discharge transit mixers operated by Linthicum's Certified Concrete Co.

A NEW PLANT operated by Linthicum's Certified Concrete Co., High Point, N. C., is supplying 12,000 cu. yd. of concrete to two slum-clearing housing projects. Although the plant was built as a permanent enterprise, and not for these projects alone, the steady stream of new mixer trucks going through the city to the job sites is helping to stimulate curiosity and build a local business.

Both projects specify transit-mixed concrete for the first and second floor slabs and the foundations. The mix calls for 7¾-gal. of water to the bag of cement, with one sack of hydraulic lime (78 lb.) to four sacks of cement. Strength requirements are for 2000 p.s.i. at 28 days.

These projects are serviced with four 2-cu. yd. Jaeger high dump mixers on International trucks, with hauling distances of ¾-mile and 1¼-miles. The maximum pour thus far has been 198-cu. yd. to one job site in a day, using a 2-cu. yd. Jaeger portable hopper at the project to reduce waiting time. This rubber-tired hopper feeds out to wheelbarrows, and is towed to the sites behind a mixer truck.

The plant was designed by W. H. Linthicum, general manager, for handling aggregates delivered by rail and for the use of cement in sacks. It has a steel batching bin, 2-cu. yd. weigh batcher and comparatively large reserve storage for aggregates adjoining the batching plant.

An elevated railroad spur has been built alongside the batching plant at the level of the batching floor. It's a simple matter to transfer sacked cement from box cars into a warehouse adjoining the operating floor. The warehouse will hold 2400 sacks of cement, and sand and gravel are dumped from hopper-bottomed cars direct into wood bins that have a capacity for four cars.

A 24-in. belt conveyor on 40-ft. centers under the bins withdraws sand and gravel, transferring to a chain bucket elevator, 55-ft. centers, to fill the batching bin. This handling equipment was manufactured by the Iowa Manufacturing Co.

Aggregates are batched out from a 2-compartment 52-ton Heltzel steel bin which has had its sides built up to hold 75 tons. Weighing is done by a Kron 10,000-lb. scale and mixing water is measured by a Neptune water meter. Water is added directly into the batcher along with the sand and gravel; cement is added into the mixer drum through a spout under the cement storage warehouse.

Concrete is sold under the trade name, "Linthicum's Certified Concrete," and the mixer trucks carry the same advertising painted on the sides of the drum. The company was formed as a subsidiary to W. E. Linthicum and Son, building material dealer. Production began in February, 1941.

Left: View of the plant showing, from left to right: bag cement storage, batching bin and equipment, and the bucket elevator to reclaim aggregates from dead storage bins. Right: Looking at plant from other end. Note railroad trestle erected to permit storing aggregates in bins as a reserve

From Autos to Blocks

(Continued from page 72)

used for cast stone, precast joist, and chimney blocks. Lintels and sills are also made. A still smaller mixer on this balcony is used for cast stone facing. In addition to a well equipped machine shop, where even major repairs are made, there is also a completely equipped pattern and plaster shop at the end of one of the two stone floors, where all types of forms for cast stone are made.

Specially designed cars, holding 72 blocks each, are used for transferring units from machine to curing rooms. A 25-hp. steam boiler with stoker, automatic water feeder and automatic controls, furnishes steam at 2 lb. pressure for curing. Temperature in curing rooms is carried up to about 135 deg. for about four hours, and the block remain in the room for 12 hours. Another boiler of the same size is used for emergency, to avoid any possibility of freezing or a shutdown in case of failure of the first boiler.

For unloading blocks to stock piles, the track in the yard is not stationary, but is dragged along the yard as the stock pile advances, so that blocks do not have to be carried more than a step or two from car to storage. A minimum stock of 50,000 block is carried with 122 different types and sizes. To assure uniform quality, a local testing laboratory the first of each month picks up sample blocks representative of deliveries at that particular time and furnishes reports on compression, absorption, and percentage of moisture contained at time of delivery. These reports are made public property and sales resistance is greatly reduced by showing absorption below 5 percent and compressive strength above 1200 p.s.i. This company has found that block of high quality and eye appeal, practically sell themselves and at a premium in price.

There are no regular block salesmen; about 70 percent of the product is taken by lumber yards or dealers, thereby simplifying sales problems. When a special selling job is needed, this is handled by Austin Crabbs, Jack Crabbs, or by one of the other salesmen, who spend most of their time with specialty lines, such as steel windows, steel partitions, overhead doors, Federal cement tile roofs, etc.

Among recent projects furnished can be mentioned the Federal housing jobs at East Moline and Rock Island, a large bowling alley building, an ice skating rink, factory and warehouse buildings, and numerous residence foundations. Incidentally, to promote concrete masonry residences, a special 10 percent discount is given for blocks used above the basement in homes. In addition to the considerable amount of hauling done by dealers with their own trucks, this company uses three trucks of their own.

Liberal use is made of the exceptionally fine literature furnished by the Portland Cement Association. In addition, some very attractive road signs and cards are used. Advertising is also carried in private plan books, of which there are a number in this locality. Some newspaper advertising is done and pencils and book matches are used freely as good will builders. However, it is a definite policy of this firm that high quality and good appearance of the blocks themselves are their own best ads and getting these facts across, accounts for the continued success of Austin Crabbs Incorporated.

Products for Defense

(Continued from page 70)

kilns, six are set aside for block and five for pipe. The kilns are 80-ft. long and have a capacity of 19,000 block (6 kilns).

Pipe are handled into the kilns by conventional rubber-tired carts and a Barrett lift truck moves the block racks into the kilns.

Concrete block are subjected to wet steam as much as 48 hours on rush orders. Steam enters the kilns through a steam line at floor level, into which is tapped a ¼-in. water line to release a steam "fog". In curing pipe, steam is released into the kilns through separate lines and water is sprayed continuously over the pipe from a water line.

Concrete block are made with a mortar groove joint that is finding favorable acceptance among architects. Both concrete pipe and block are made with plenty of extra strength over and above that set by the governing specifications. Pipe are manufactured to specifications of the Virginia Highway Department and A.S.T.M., and block are regularly tested by the Underwriters Laboratory.

A minimum of 50,000 concrete block are held in stockpiles all the time. A new Lorain heavy-duty, gasoline crane is kept busy handling cinders in the yard, heavy pipe and in loading pipe onto trucks. This machine weighs nine tons and is fitted with 30-in. crawler treads.

Deliveries of pipe and block are made over a 150-mile radius on three 50-ton company-owned, semi-trailer trucks and others that are rented. The company has found the truck-drivers to be its best salesmen because of the service given through their willingness to make as many as ten stops at a job to drop the products off exactly where they are wanted.

Besides pipe and block, other products include lintels, sills, and concrete brick. Certain specialties such as railroad whistle posts and heavy precast bridge sections have been made on order.

In anticipation of difficulty in obtaining replacement parts and supplies, due to priorities, the company had stocked up in advance on certain items that are likely to need replacement. These include electric motors, crusher hammers, manganese rolls and a long list of lesser parts. As soon as any item or part is taken from stock, a requisition is made out for a replacement.

Mid-Atlantic Concrete Pipe and Products Corp. was organized in 1925 and operates a second plant at Dover, Dela., which is practically a duplicate of the Norfolk plant. John E. Johnson is president and treasurer of the corporation; W. K. Hayman is secretary and general manager; and B. Bookout is general superintendent.

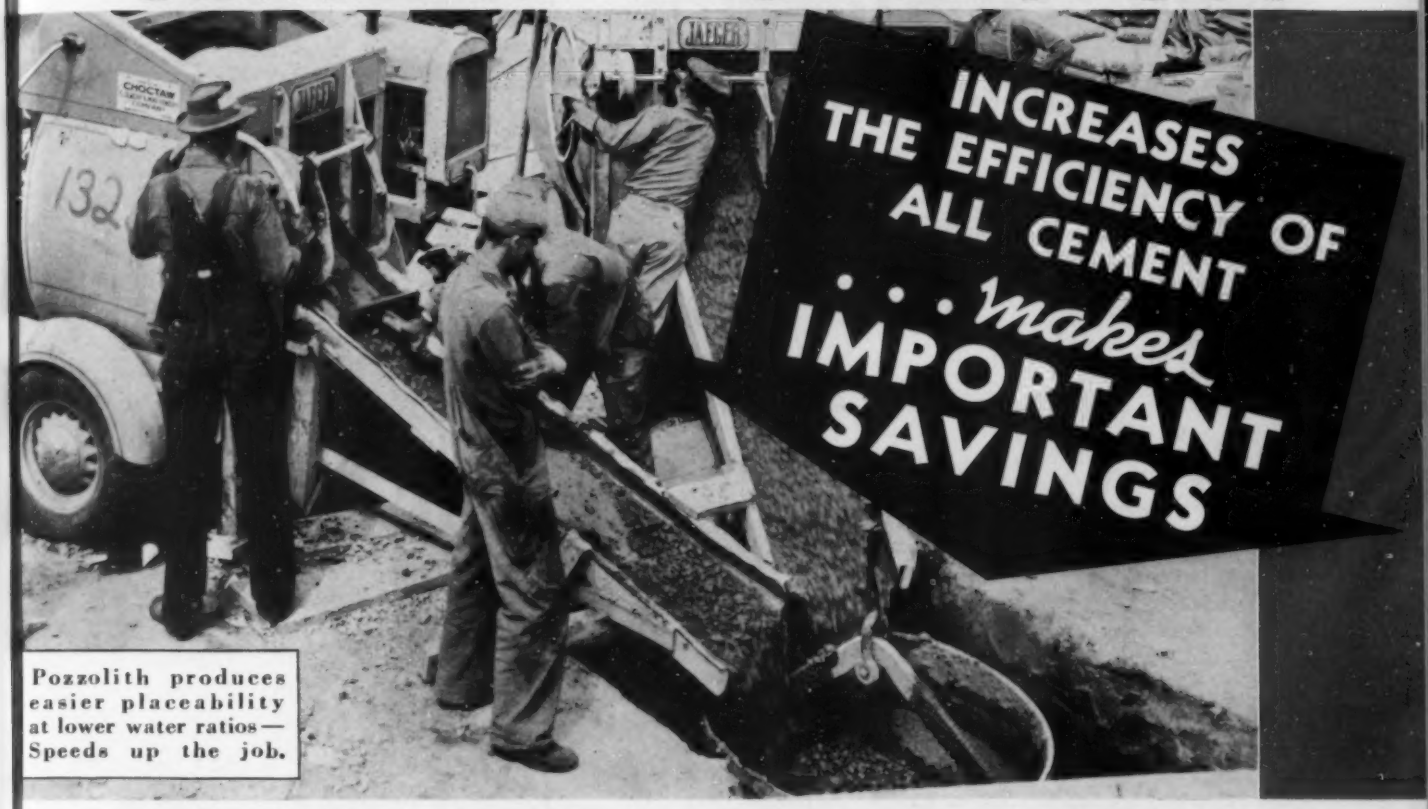
Concrete Inspection Manual

American Concrete Institute, Committee 611, Inspection of Concrete, has issued a 137-page manual on concrete inspection, containing a wealth of information, in a size that may easily be carried in the pocket. This information was compiled not only for inspectors, but also for use by engineers, architects, contractors, and others interested in construction. It also should be of value to ready mixed concrete producers and concrete product manufacturers.

Chapters are devoted to organization and equipment, fundamentals of concrete, inspection and testing of materials, proportioning, inspection before concreting, inspection of concreting, inspection after concreting, testing, records and reports, special methods of concreting, standard specifications and test methods, etc.

It was prepared by J. W. Kelly as Author-Chairman of Committee 611, and has been revised and reviewed by other members of the committee who are R. L. Bertin, Miles N. Clair, H. M. Hadley, F. H. Jackson, Arthur R. Lord, T. C. Powers, Arthur Ruettgers, Lewis H. Tuthill, R. S. Wilson, and R. B. Young. The price is $1.00, and the book may be obtained from the American Concrete Institute, Detroit, Mich.

CEMENT DISPERSION



Pozzolith produces easier placeability at lower water ratios—Speeds up the job.

THIS IMPORTANT TECHNOLOGIC ADVANCE

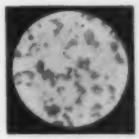
RAISES ALL EXISTING CONCRETE STANDARDS AND ASSURES—

1. Concrete of given Strength at Lower Cost

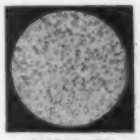
2. Stronger and More Durable Concrete at a Given Cost

THE discovery by the Master Builders' Research Laboratories of a practicable cement dispersing agent and its incorporation in Pozzolith made possible, for the first time, the application of dispersion to all types of hydraulic cement.

Cement particles in their normal state in water tend to gather in bunches; i.e., flocculate. Water never reaches some particles and many are only partly hydrated. This reduces the effectiveness of the cement, entraps water within the clumps, requires an excess of water for placement and often results in bleeding and segregation. See photomicrograph at right.



UNDISPERSED



DISPERSED

With Pozzolith the dispersion principle operates to drive each particle apart, thus exposing all the cement particles to the vital hydrating action and consequently assuring increased efficiency. See photomicrograph at left.

This dispersion, a revolutionary advance in construction practice, makes the cement usable to far greater efficiency since all the water is made available for lubrication of the mix, and the entire surface area of the cement is exposed for hydration.

Only a part of the cementitious value of the cement, whether normal portland or high early, is utilized under usual construction conditions. Investigation shows that with 28 days curing only 50% of the cement hydrates. Even with 90 days curing only 60% of the cement hydrates. [Anderegg and Hubbell, A.S.T.M. 29 II 554 (1929)].

Since strength is a function of the degree of hydration, it is immediately obvious that increased strength is related to increased hydration.

Cement Dispersion applied through Pozzolith increases the degree of hydration of the cement from 30% to 40% which is fully confirmed by corresponding increases in strength.

LOW INITIAL COST

Inasmuch as the requirements of design and of specifications are based on the strength of concrete at 28 days, Pozzolith concrete mixes under the dispersion principle take full practical advantage of the potential value of cement and hence are far more economical.

SPEED FOR DEFENSE

Greatly increased placeability and high early strength with Pozzolith result in speeding up the job, producing further substantial savings.

The complete story of Cement Dispersion and Pozzolith, how it "puts all the cement to work" and makes important savings will be sent on request.

THE MASTER BUILDERS COMPANY

CLEVELAND, OHIO — TORONTO, CANADA

MASTER BUILDERS

Crushed Stone For Ready Mix

M. L. Kernan Quarry starts ready mixed concrete business to open market for certain sizes of crushed stone

Charging a transit mixer at new batching plant of Kernan Concrete Co.

EARLY THIS YEAR The M. L. Kernan Quarry, South Orange, N. J., a producer of crushed trap rock, went into the ready-mixed concrete business to enlarge and stabilize its markets for crushed stone. New outlets were desired for particular sizes of stone which have a habit of accumulating in stockpiles. A subsidiary, the Kernan Concrete Company, was organized to operate the new business.

Production began May 14, 1941, with a new batching plant, and a fleet of eight transit mixer trucks. The plant was designed and built by the Fanning-Schuett Engineering Co., Philadelphia, Penn., a concern which is new to the ready-mixed concrete industry, but for years has been manufacturing similar handling and storage equipment for other industries.

While the plant is a typical all-steel unit, it has some differences in details of design, and is built to handle 1000 cu. yd. of concrete in nine hours. It has a total bin capacity for 300 tons of aggregates, in four compartments; a second two-compartment bin that will hold two carloads of portland cement in bulk; and has a 5-cu. yd. weigh hopper for aggregates. With the exception of two mixer drums of 3-cu. yd. capacity, the fleet consists of 5½-cu. yd. truck-mounted mixers. There are 11 Jaeger mixers in all, on Autocar truck chasses designed for this equipment.

View of new ready mixed concrete batching plant and office adjacent railroad tracks. Bin holds 300 tons of aggregates

Separate weigh hoppers adjoin on the batching floor, with individual Kron scales for weighing out cement in one batcher and aggregates in the other. These batchers are fed materials direct from the bins overhead through lever-operated bin gates, and are discharged simultaneously through a common collecting spout into the transit mixers.

While the truck mixers are being charged, the drivers fill the mixing tanks on the trucks direct from a city water line. In this part of New Jersey, variations in the specifications with respect to when the mixing water shall be added and the mixing time permitted are complicating. The highway department insists that no mixing water be added until the trucks reach the job. Essex county, on the other hand, wants the water to be added at the plant.

Batching is done in the S. Orange yard of the Delaware, Lackawanna and Western railroad, which is a convenient location for receiving cement and fine aggregate by rail. Bulk cement is handled in the usual way, with an enclosed screw conveyor and bucket elevator to fill the cement bins.

Receiving hopper for aggregate received either by truck or rail. Belt conveyor discharges into bucket elevator to bins

JAEGERS DO what others merely claim

CHARGE, MIX and DISCHARGE FASTER THAN ANY OTHER TRUCK MIXER — We can PROVE IT!
HIGH DUMP
2 TO 5 YD. SIZES
PRODUCE HIGHER STRENGTH CONCRETE by reason of JAEGER'S exclusive END-TO-END DUAL-MIX with THROW-BACK BLADES
We can PROVE IT!
LOW CHARGE
2 TO 8 YD. SIZES
THE ONLY LINE THAT MEETS EVERY SPECIFICATION and DEMAND — Outsells All Other Makes
Jaeger, alone, offers maximum payload production of highest quality concrete in units with standard 2-Speed Transmission (Separate Engine or Vacuum-Controlled Truck Engine Drive), One-Shot Top Loading, Vacuum-Controlled High Discharge Door, End-to-End Water Sprays and Dual-Mixing in Sealed Drums. Also Combination Top or End Loaders for older or temporary plants not equipped for fast ribbon loading.
Send for complete catalog and prices — 2 to 8 Yd. sizes.
Combination Top or End Loader — to meet conditions. Only end loader that does not constrict drum opening or require moving Hopper to discharge.
Portable 2-3 Yd. Hopper: Eliminates waiting—averages 25% more payloads. Tows behind truck mixer.

THE JAEGER MACHINE COMPANY 603 DUBLIN AVENUE COLUMBUS, OHIO

Aggregates are placed in the bins by an endless chain bucket elevator from a track hopper, with a swivel chute over the bin to drop the material into the proper bin compartments. It will be noticed from the illustrations, that this hopper is placed for receiving aggregates either by truck or rail, and that a 14-in. belt conveyor is used to transfer the materials into the elevator buckets. Sand is usually received by rail and is unloaded at the rate of 60-cu. yd. per hour, while the coarse aggregate comes by truck from the Kernan quarry. One man is needed to operate the entire plant.

This description is of the plant before its final completion. For winter operation, the bins and batching equipment are to be entirely enclosed and the batching floor will be heated. There will also be a warehouse for the storage of special cements in sacks.

Close-up of batching plant. Note weigh-hoppers over common discharge chute

South Orange is a small city but is one of many similar communities all within a few miles of each other that, taken together, make up one of the heaviest populated areas in the United States. The company intends to operate within a 15-mile radius of the plant. Ready-mixed concrete isn't a new building material in the area, and will be sold almost entirely by direct, personal contact.

M. L. Kernan Quarry has been in business as a crushed stone producer since 1905. Another affiliated company is Kern-O-Mix, Inc., a subsidiary, operating an asphaltic concrete plant at the quarry. E. G. Kernan is president of Kern-O-Mix, Inc., and Louis E. Kernan is president of Kernan Concrete Co. J. W. Doriety is in charge of production. William J. Dockery is general manager of Kernan Concrete Co.

Concrete Barge Proposals Have Been Submitted

THE MARITIME COMMISSION, Washington, D. C., has requested proposals for construction of reinforced concrete barges from 74 contractors. Specifications submitted with the proposals are for barges not more than 360-ft. long, with a draft when fully loaded, not in excess of 28½-ft. Capacity of the barges is to be between 5000 and 8000 long tons, depending upon the bulk commodity carried.

Large Cement Shipments For Ordnance Depot

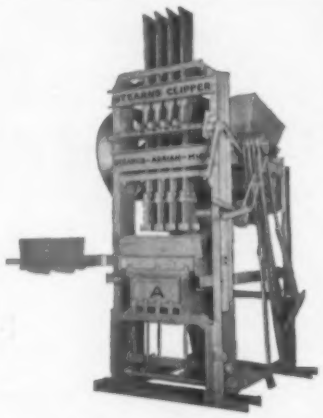
THE LEHIGH PORTLAND CEMENT CO., Metaline Falls, Wash., plant is operating at capacity. About 10 cars of cement are moving daily to Umatilla, Ore., to supply cement for an increase in capacity of the ordinance depot near Hermiston. The number of ammunition and powder "igloos" at this depot has been increased from 750 to 1000. Each igloo requires about 2½ cars of cement. The project also involves about 20 miles of concrete pavement.

Building Regulations For Reinforced Concrete

AMERICAN CONCRETE INSTITUTE, DeDetroit, Mich., has recently released from the printers its new building code, "Building Regulations for Reinforced Concrete (ACI 318-41)" which supersedes the tentative code of 1936.

Minerals Year Book

BUREAU OF MINES, Department of the Interior, has announced that the 1941 Minerals Year Book will be released three months in advance of last year's date. It will contain 1459 pages with data on more than 100 minerals, and will have available information relating to strategic and critical minerals which has never before been published.



"ANCHOR"

Complete equipment for making concrete, cinder and other light weight aggregate units, including engineering service for plants and revamping of old ones for more economical service. Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Jolterete, Stearns mixers, pallets, Straublox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mchy. Co.

G. M. Friel, Mgr. Columbus, O.

NEW LOW COSTS! in Block Production

Nothing equals the combined VIBRATION and PACKING of

PAK-CRETE

Write TODAY for illustrated folder, details, prices. Compare for yourself.

KRAMER PRODUCTS CO.

Industrial Street Peoria, Illinois

SURE CONCRETE BRICK CAN BE MADE WITHOUT PALLETS ON THE

JACKSON CONCRETE BRICK MACHINE

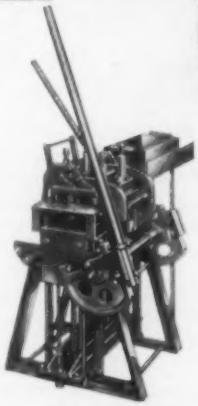
Just Think What This Means in Dollars and cents saved in handling and upkeep as well as the cost of the pallets themselves.

Investigate today the most efficient and up to date concrete brick making equipment on the market.

JACKSON & CHURCH CO.
SAGINAW, MICH.

INTERLOCKING BLOCKS LAID *without* MORTAR

- Blocks made on this improved machine being mortarless and interlocking, allow unskilled labor to be used for laying up.
- Machines leased to responsible operators in protected territories, protecting your profits and your markets.



High-strength mortarless, interlocking blocks can be produced on this patented improved double-press machine without tying up your money in expensive equipment. Manufactures units meeting all code and specification requirements at a lower cost than any other machine on the market. Available for all sizes and types of units. Powerful pressure achieved by long, hand-operated levers. Get the facts **now! No obligation.** just drop a card or letter to

MORTARLESS TILE MACHINE COMPANY, Inc.
3328 San Fernando Road, Los Angeles, California

How You Can Solve HIGH PRICES and SHORTAGES

In essential materials used daily in tremendous volume by the building industry.

You use your surplus aggregate. We equip you with special line production machinery. Only modest investment required — balance easy monthly payments.

Scores of established manufacturers have proven the quality and salability of product, as well as the earning power and stability of this business. (Names on request.)

This opportunity offered only one man in each community to make this proven low-cost material. (Samples furnished.)

Act now while your territory is still open. Write or wire for Free Books and learn how you, too, can own one of these profitable businesses.

W. E. DUNN MFG. CO.
23 W. 24th St. *Holland, Michigan*

One of the many all-concrete housing projects—the 176-family Gateway Gardens, slum clearance project, built by Kokomo, Indiana, Housing Authority in cooperation with U. S. H. A. Firesafe concrete walls, foundations, floors and roofs specified throughout. Graham and Knowlton of Indianapolis, architects. Superior Construction Co. of Gary, Indiana, contractors.

All kinds of homes need these advantages of CONCRETE

Whether for national defense homes, low rental housing, homes for men in service or private homes, concrete is the ideal housing material for these reasons:

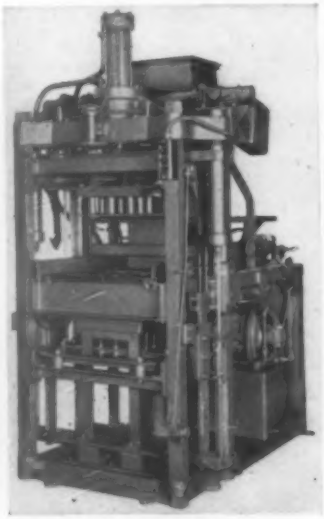
1. Easily available local materials that require a minimum use of transportation facilities.
2. Trained workmen in every community.
3. Fire protection—always important, but especially so in times of emergency and in housing large numbers of people in close quarters.
4. Lasting good appearance and lifetime comfort and livability.
5. Real economy—moderate first cost, very low upkeep, lowest yearly cost.

This is the story concrete products men and concrete contractors should be hammering home every day to public officials, to builders and others engaged in public or private housing in their communities.

PORTLAND CEMENT ASSOCIATION
Dept. A10-45, 33 W. Grand Ave., Chicago, Ill.

A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

HYDRAULIC VIBRA-PRESS



A High Production Machine Making Blocks which are Demanded by the Contractor Endorsed by the Architect Desired by the Mason

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO

Wage and Hour Lawsuit Won

FEDERAL Judge Elmer Davies, in the United States District Court for the Middle District of Tennessee, Nashville Division, in a recent decision, Civil Action No. 131, dismissed a complaint against the Nashville Breeko Block and Tile Co. that it was in violation of the Federal Wage and Hour Law. The suit was brought by Clarence L. Hooks, individually, etc.

In the findings of fact, it was revealed that cinder blocks are products that are only sold economically within a short distance of the plant and that the building blocks produced by the defendant were a standard variety which are maintained in a large stock inventory.

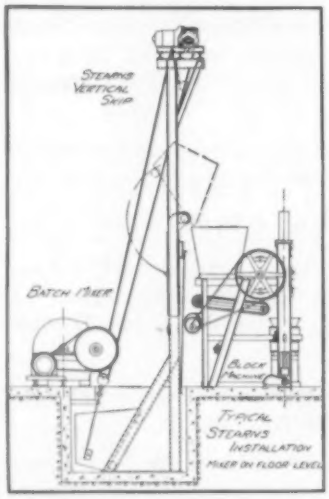
It was proven that in a period of 15 years, at least 98½ percent of the goods manufactured by the defendant has been sold in intra-state commerce and 95 percent were sold locally in Nashville and Davidson county, Tennessee.

A few isolated cases were presented in the findings where cinder block were delivered outside the State. In each instance it was determined that these block were from stock and that at the time of manufacture there was no knowledge or expectation that they would be shipped and delivered outside the State of Tennessee. Neither had the company advertised for business outside the State nor had salesmen solicited such business. Similarly, it was ruled that a few mold boxes made by the firm and later shipped into other States was incidental and an accommodation out of which the defendant received no profit. The mold boxes were made for use in the defendant's own plant.

Bass, Berry and Sims, Nashville, represented the Nashville Breeko Block and Tile Co.

Deny Collusion in Cement Price Trial

IN TESTIMONY offered at the trial of three cement companies operating in Colorado, the charge of collusion in fixing a minimum price for cement was denied. The three companies, the Ideal Cement Co., Colorado Portland Cement Co., and the Monolith Portland Midwest Cement Co. have been charged with violating the federal Sherman Anti-Trust Act. It was brought out that the action taken by the cement companies was aimed at stopping a cement price war. The minimum price was set under a State Fair Trade Law permitting the practice.



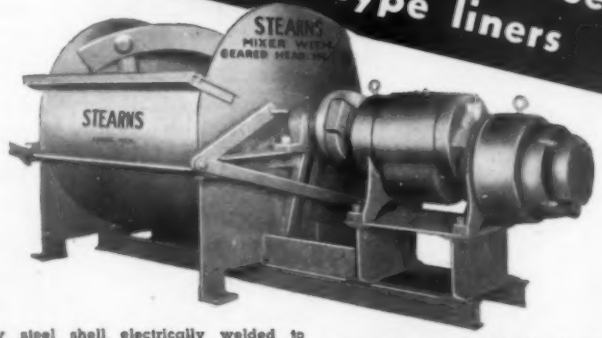
Skip Loaders

For hoisting mixed or dry material to overhead mixer, bin or feeding chute. Installed with any make of mixer. Ask for Skip Loader Folder.

Write for Circulars

We also manufacture the famous Stearns Jolicrete Block Machine, Clipper Stripper, Brick Attachments and complete concrete products plant equipment. Ask for circulars.

STEARNS
— the mixer with the hardened steel replaceable, bar type liners



Heavy steel shell electrically welded to steel ends. Interchangeable, replaceable liners of tough, hardened, rolled steel bars protect mixer shell. Adjustable ribbon blades of abrasion-resisting "Sterloy." Low charging height. Large, quick opening, tight locking discharge door. Sizes: 3, 12, 18, 28, 42 and 50 cu. ft. Pulley, V-Belt or Gearhead motor drive. Mounted on skids or 4-wheeled trucks. Ideal for service in concrete products or central mixing plant. Ask for Mixer Folder.

STEARNS
MANUFACTURING CO. - ADRIAN, MICH.
GENE OLSEN, PRESIDENT

FREE! New Literature

THE bulletins and catalogs described below are for your benefit. To save you the necessity of writing individual letters, those you want can be obtained by merely checking and mailing the coupon on next page.

1 BUCKETS.—The Hayward Co. Bulletin No. 630 describes and illustrates different types of buckets.

2 CABLE.—R. G. LeTourneau, Inc., has announced a new cable known as the Tournarope. Details concerning this equipment may be found on the New Machinery pages of this issue.

3 COMPRESSOR.—Pennsylvania Pump & Compressor Co. New bulletin, just issued, describes and illustrates horizontal, single-stage, heavy duty compressors, which are available in sizes from 5 to 125-hp. and for pressures up to 150 p.s.i. gauge. They have also issued Bulletin No. 192 covering their new Duplex compressor for either single or two-stage compression. This is available in capacities up to 3100 cu. ft. piston displacement for pressures of 80 to 125 p.s.i. gauge. These compressors can be equipped for drive by synchronous electric motor direct connected to the main shaft or by flat or V-belt.

4 COMPRESSOR. — Sullivan Machinery Co. has designed a two-wheel, pneumatic-tired Zephair compressor. Details of this model may be found on the New Machinery pages of this issue.

5 CONTROLLERS. — The Brown Instrument Co. has issued a new catalog No. 8903 containing facts and descriptions of various types of air operated controllers. Large photographs of instruments and installations are featured throughout the catalog.

6 CONVEYOR.—Link-Belt Co. has issued booklet No. 1975 introducing the new Bulk-Flo conveyor for handling flowable materials in a continuous mass. Travel may be horizontal, vertical, inclined, or around a curve, and a single self-contained unit may carry in all these directions.

7 CRANE.—Buckeye Traction Ditcher Co. has brought out a yard crane with a short gooseneck boom, details of which appear on the New Machinery pages of this issue.

8 CRUSHER. — Iowa Manufacturing Co. has increased the size of its Morok portable crushing plant. A description of this plant appears on the New Machinery pages of this issue.

9 CRUSHER.—Pioneer Engineering Works has developed a larger size jaw crusher of welded steel, details of which appear on the New Machinery pages of this issue.

10 CRUSHER. — Traylor Engineering & Manufacturing Co. Bulletin No. 3112 gives the general specifications, cross sections, tables of sizes and capacities, diagram and numbered list of parts of the Type TY reduction crusher.

11 DIPPERS.—Electric Steel Foundry has issued a bulletin describing and illustrating manganese steel dippers for every type of special service.

12 DRIVES.—Allis-Chalmers Mfg. Co. Bulletin B-6051-B describes the complete line of Texrope Drives, including the new Texrope Super-7 V-belt, Duro-Brace Texsteel, and True-Groove Texdrive sheaves, Vari-Pitch sheaves, FHP adjustable sheaves and Vari-Pitch Speed-Changers. A new Texrope drive selection table makes it easy to figure the proper size of drive for each application.

13 DUST COLLECTORS.—Pangborn Corp. has issued a new bulletin No. 907 describing unit type dust collectors which are shipped completely assembled ready for attachment to individual machines. Many other unique features are described in the bulletin.

14 FLASH DRYING. — Combustion Engineering Co., Inc., Raymond Pulverizer Division, has issued Bulletin No. 50 showing how flash-drying simplifies production methods in making powdered materials by drying and grinding simultaneously in a single machine.

15 GEARS.—Link-Belt Co. has announced a new 52-page catalog and data book No. 1874, illustrating and describing its all-metal chain gear. This catalog gives speeds, torque ratings, dimensions, weights, and other data for all seven sizes, each available in five standard types, horizontal and vertical mountings.

16 HOISTS AND BODIES.—Gar Wood Industries, Inc., has issued Bulletin No. 8 illustrating and describing various types of hoists and bodies installed on 6-wheel chassis.

17 INDICATING AND CONTROL INSTRUMENTS.—Wheelco Instruments Co. new Data Book and Catalog is claimed to be the most complete compilation of data ever published for thermocouple users. Its 32-pages contain such valuable information as temperature conversion tables, millivolt tables, pipe and wire sizes, decimal equivalents, wire resistances, recommendations for checking thermocouples and pyrometers, information on how to construct thermocouples, etc.

18 JAW CRUSHERS. — The Eimco Corp. has a bulletin No. 305 describing the constructional features and other data of its improved jaw crusher.

19 KILNS, COOLERS AND DRYERS. — Traylor Engineering & Manufacturing Co. new bulletin No. 115 graphically illustrates and completely describes their kilns, coolers and dryers.

20 LINERS. — The Eimco Corp. has released a bulletin descriptive of Super-Molychrome liners for ball, rod and tube mills.

21 MACHINERY.—The Smith Engineering Works has issued a new catalog (Telsmith Bulletin No. 266M) describing and illustrating various types of machinery for mine, quarry and gravel pit.

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22 MIXERS.—The Multiplex Concrete Machinery Co. Catalog No. 29 describes and illustrates power tampers, hand machines, power mixers, flue block machines, power presses and hand press stripper.

23 MIXERS.—Ransome Concrete Machinery Co. has announced a new eight-page Bulletin No. 177 on their 14-S mixers, Model U, containing large illustrations and complete details of the equipment.

24 MOTORS. — Allis-Chalmers Co. eight-page bulletin No. B6052-B describes their complete line of Lo-Maintenance motors in ratings from ¾ to 75-hp. open, enclosed and splash-proof types, a-c, and d-c.

25 PRESSURE CONTROLLER.—The Brown Instrument Co. has issued an eight-page Bulletin No. 74-2, telling "How," "Why," "When," and "Where" its furnace pressure controllers can be used to maintain constant furnace pressure automatically.

26 PROTECTORS. — The B. F. Goodrich Co. has reported an unusual use for its air-cell latex foam material, details of which appear on the New Machinery pages of this issue.

27 PULLEYS.—Stearns Magnetic Mfg. Co. has issued a new 16-page comprehensive reference catalog on the subject of magnetic pulleys and magnetic pulley separator units, containing descriptive matter, illustrations, specifications, applications and voluminous data on the subject.

28 PUMPS.—Allis-Chalmers Mfg. Co. has issued an eight-page booklet, No. B6059, which describes and illustrates the wide range of centrifugal pumps built by this company. Included in the book are pumps for handling capacities from 10 to 200,000 g.p.m. and for heads ranging from 10 to 4200 ft., also single and double suction single stage pumps, double suction multi-stage pumps, open runner paper stock pumps, and axial flow pumps.

29 REFRACTORY BRICK. — Harbison-Walker Refractories Co. has brought out a descriptive folder about high-alumina brick.

30 PUMP.—Fairbanks, Morse & Co. has issued Bulletin No. 6720X descriptive of horizontal short-coupled motor driven pumps.

31 ROLL CRUSHERS. — Diamond Iron Works, Inc., has added a larger size roll crusher to its present line of equipment, details of which appear on the New Machinery pages of this issue.

32 ROLL CRUSHERS.—New Holland Machine Co. has published Bulletin No. 401 describing and illustrating roll crushers designed to crush all kinds of rock, gravel, cinders, etc., for road chips, pebble dash, roofing granules, chicken grit, concrete and building sand, cinders for cinder blocks, torpedo sand," etc. The range of reduction is from 3" down to sand.

33 SCALE.—The Cleveland Crane and Engineering Co. has developed a traveling batch scale car adaptable for handling batch materials. Details regarding this scale appear on the New Machinery pages of this issue.

34 SCREENS.—Deister Machine Co. has brought out two bulletins describing and illustrating eight advantages of the Plat-O heavy duty vibrating screens.

35 SHOVEL PARTS.—The American Brake Shoe & Foundry Co., American Manganese Steel Division, has issued Bulletins Nos. 641-D and 641-S giving design changes and complete details on power shovel and dragline parts, and shovel dippers and dipper parts.

36 SHOVELS.—The Austin-Western Road Machinery Co. has issued a new graphically illustrated catalog on Badger shovels, including attachments.

37 SWING JOINTS.—Chiksan Tool Co. has issued catalog and price list No. 41 on its ball-bearing swing joints.

38 TURNTABLES. — Blaw-Knox Co. has brought out a turntable for the use of trucks which are required to operate in closely confined areas. Details concerning this equipment may be found on the New Machinery pages of this issue.

39 V-BELTS. — The B. F. Goodrich Co. Catalog Section 2181, just issued, contains tables on standard fractional horsepower V-belts, and describes the balanced construction of the V-belt and the advantages of V-drives.

40 VIBRATORY HANDLING EQUIPMENT. —Syntron Co. new 48-page catalog includes illustrations and information on vibrators, conveyors, complete feeder machines, constant weigh feeders, net batch and gross batch weigh feeders, packers and jolters, electric hammers, replacement shaft seals, swivel pipe couplings, and hopper level switches.

41 WATERPROOF CLOTHING. — Goodall Rubber Co. has issued a new waterproof clothing catalog, No. 203, covering 150 styles of safety and service clothing, rubber blankets and gloves.

42 WELDER. — Allis-Chalmers Mfg. Co. has introduced its new low current precision Weld-O-Tron for handling very thin sheets and for intricate work. This unit is manufactured in two sizes, one having a 5 to 40 ampere output and the other having a 5 to 75 ampere output. Bulletin No. B6049 describes this unit.

43 WIRE ROPE.—American Chain & Cable Co., Inc., Hazard Wire Rope Division, new book contains specifications which show the proper wire rope to use on different parts of various machines.

44 WIRE ROPE.—MacWhyte Co. has issued a new catalog which contains many new additions helpful to wire rope consumers and lists more than 1000 ropes. It is sectionalized for quick reference with a tabbed index and table of contents for each section.

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(10-41)

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Name ..... (Position) .....

Company .....

Street .....

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NATIONAL ASSOCIATION ACTIVITIES

Safety Congress Program

A SYMPOSIUM of top executives of the cement, lime, crushed stone and related industries will be a highlight of the National Safety Congress held at the Stevens Hotel, Chicago, the week of October 6. It will feature the Cement and Quarry Section program scheduled for the afternoons of October 8 and 9.

Participants in the formal discussion on Thursday afternoon, October 9, on the importance of executive interest in the safety program will be Bernard L. McNulty, president of Marblehead Lime Co., Chicago; Joseph S. Young, president of Lehigh Portland Cement Co., Allentown, Penn.; and John J. Porter, who is president of North American Cement Corp., New York City, and chairman of the Portland Cement Association Committee on Accident Prevention and Insurance. Mr. McNulty will preside, starting the discussion and leading the question-and-answer period open to discussion from the floor which will follow the formal presentations by Mr. Young and Mr. Porter.

The Thursday afternoon session will be preceded by the annual Congress luncheon of the Cement and Quarry group at which Frank T. Sheets, president of the Portland Cement Association, will preside and introduce Dr. Charles Copeland Smith of the National Association of Manufacturers. Dr. Smith is ranked as an outstanding speaker, and an inspiring address is anticipated.

The complete two-day Cement and Quarry safety program follows:

WEDNESDAY, OCTOBER 8

Report of General Chairman, R. A. Dittmar, plant manager, Universal Atlas Cement Co., Hudson, N. Y.

Cement and Quarry Accident Experience. I. F. LeGore, safety engineer, Portland Cement Assn., Chicago.

How to Get and Keep Safety Interest. Presiding: Austin B. Cox, director, Industrial Relations, Pennsylvania-Dixie Cement Corporation, Nazareth, Penn. (Panel Discussion.)

Participants: Edward Gustafson, repairman, Petoskey Portland Cement Co., Petoskey, Mich.; F. L. Maus, safety director, Alpha Portland Cement Co., Easton, Penn.; W. B. Russell, assistant secretary, Peerless Cement Corp., Detroit.

How to Reach the Man on the Job. (Panel Discussion.) Presiding: P. N. Bushnell, manager, personnel and safety, Missouri Portland Cement Co., St. Louis, Mo. Participants: Claude L. Baylor, personnel director, Louisville Cement Corp., Speed, Ind.; F. J. Buffington, safety engineer, New York Trap Rock Corp., New York City; M. P. Greer, safety engineer, Marquette Cement Manufacturing Co., Cape Girardeau, Mo.

THURSDAY, OCTOBER 9

Luncheon: Presiding: Frank T. Sheets, president, Portland Cement Association, Chicago.

Address: Dr. Charles Copeland Smith, National Association of Manufacturers, New York City.

2:30—Election of 1941-42 Officers.

3:00—Executives Look at the Safety Program (Symposium). Presiding: Bernard L. McNulty, president, Marblehead Lime Co., Chicago.

Such problems as the following will be discussed:

1. When and How Personal Interest Is Best Demonstrated.
2. The Importance of the Executive's Example.

Participants: Joseph S. Young, president, Lehigh Portland Cement Co., Allentown, Penn.; John J. Porter, president, North American Cement Corp., New York City.

Industrial Sand

PRESIDENT HANSEN of the National Industrial Sand Association has stressed the importance of all members attending the fall meeting of the Board of Directors which is to be held at the Palmer House in Chicago on October 15. It is an open meeting for all members. It is particularly urgent that Illinois, Wisconsin, and Michigan members attend this meeting. The vital question of priorities and other matters will be discussed.

COMING CONVENTIONS

National Crushed Stone Association, Netherlands Plaza Hotel, Cincinnati, Ohio, February 2 to 5, 1942.

National Industrial Sand Association Directors' Meeting, Palmer House, Chicago, Ill., October 15, 1941.

National Safety Council, Cement and Quarry Section, Stevens Hotel, Chicago, Ill., October 8 and 9, 1941.

National Sand and Gravel Association, Netherlands Plaza Hotel, Cincinnati, Ohio, January 28 and 29, 1942.

Oklahoma Mineral Industries Conference, Norman, Okla., October 24 and 25.

A REQUEST has been made by the National Industrial Sand Association to the Division of Priorities, OPM, that the industrial sand industry be included among the industries entitled to benefits of the Maintenance and Repairs Rating Plan.

Lime

THE NATIONAL LIME ASSOCIATION in a recent issue of Limeographs has called the attention of members to two important priority rulings. E. R. Stettinius, Jr., Director of Priorities, has granted an A-2 rating to equipment needed by research laboratories. The National Academy of Sciences will act as a consultant in the operation of the new Research Laboratories Supplies Plan. Attention also is called to the recently revised edition of the Priorities Critical List, issued on August 18, which now includes quarrying equipment, covering only rock crushers, rock drills, and conveyors. These items are subject to priority regulation only in the sense that Army and Navy orders may be assigned preference ratings so that delivery dates may be met.

Rendy Mixed Concrete

STANTON WALKER, director of engineering, National Ready Mixed Concrete Association, has reported on the results of the ballot on the "Standards for Operation of Truck Mixers and Agitators": 43 percent of the active membership returned their ballots, none of which were marked negatively; 36 percent of the associate membership returned their ballots, all of which were marked affirmatively. As the ballot indicated unanimous approval of those voting, the revised Standard will be printed and sent to the membership.

Sand and Gravel

EXECUTIVE SECRETARY V. P. AHEARN has advised members of the National Sand and Gravel Association of the new plan which takes the place of the Maintenance and Repair Order which was never actually issued due to the difficulties involved. The revised plan permits qualified producers or suppliers to apply a preference rating of A-8 to deliveries of required repair parts by endorsing a special statement on purchase orders, certifying that the material being ordered is for repair work under the terms of the order, P-56.

Start Work on Rock Wool Plant

AMERICAN ROCK WOOL CORPORATION expects to start operation of its new rock wool plant at Red Wing, Minn., the latter part of December or the first of January, 1942. Structural steel work is well advanced, although some delay was experienced in getting certain steel shapes. Hetherington & Berner Co., Indianapolis, Ind., is erecting the steel. D. C. Drill, vice-president and chief engineer of the rock wool company, will supervise construction, and he will be assisted by Charles Osthimer, formerly of the Plainfield, N. J., plant.

Manganese Is By-product of Barite Mine

AL WOOD, operator of an extensive barite open pit mining operation near Cartersville, Ga., has found it profitable to recover manganese-bearing ore when processing barite. The black manganese ore had to be picked out of the barites washer by hand as it was heavy. A magnetic separator could not be used as manganese is not magnetic. Mr. Wood has set up a separate washer for recovery of manganese from tailings and stripping operations in the production of barite.

Approve Gravel Pit

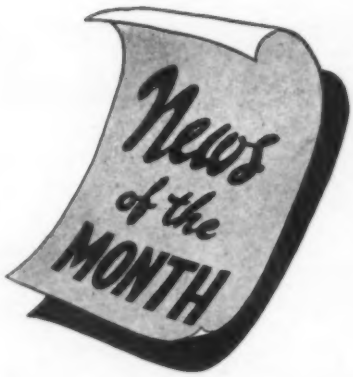
HANRAHAN CONSTRUCTION CO., Redwood City, Calif., has been granted authority to start digging in a seven-acre tract near Moffett Field to secure gravel for the runways. The planning commission approved the project with restrictions designed to prevent the pit from becoming unsightly. Sides will be sloped and the rim will be fenced and planted.

WPA Airport Program

NEARLY $130,000,000 in airport projects are now under way by WPA forces. About $60,000,000 has been spent on these defense projects, and $70,000,000 will be needed to complete the program. The 278 sites and additional auxiliary fields, all certified by the Secretaries of War or Navy, include many of 860 airport and landing field sites on which WPA had already worked.

Cut Gravel Rail Rates

A REDUCTION in rates averaging 20 percent on sand and gravel has been negotiated with all railroads serving Louisiana, according to an announcement by Governor Sam Jones. The new rates will be effective about October 15. The reductions had to be obtained by negotiation since under an I.C.C. ruling and United States Supreme Court injunction, state regulatory bodies had no authority to order such changes in rates.



New Rock Plant

OBIOLS INDEPENDENT ROCK CO., Santa Paula, Calif., is the name of a new company which is building a $10,000 crushed stone plant designed by James Leary. Solomon Obiols, cattle rancher, will head the company which will operate the quarry on his estate east of Santa Paula.

Install Trucks for Quarry Haulage

KELLEY ISLAND LIME & TRANSPORT CO., recently installed eight Easton TR-15 semi-trailers and one Easton TR-15H semi-trailer pulled by Mack model EQ tractor trucks at the Marblehead, Ohio plant. As shown in the illustration, these units were delivered by transporting the semi-trailer assemblies and tires on the tractor trucks and then assembling the units at the quarry shops. Because the bodies exceeded highway limitations, it was necessary to send them by rail.

Building Shell-Loading Plant

JOHNS-MANVILLE CORPORATION, New York, N. Y., rock products producer, has announced that it has completed a contract with the War Department to proceed at once with the construction and operation of a $27,000,000 shell-loading plant near Parson, Kans. It will comprise 400 buildings. This job was undertaken at the request of the War department as a patriotic duty. The work will be undertaken by a newly created subsidiary, known as J-M Service Corporation.

Lime Production Up

NATIONAL LIME ASSOCIATION reports that the ratio of shipments to capacity for July, 1941, was 70.8 percent as compared with 53.9 percent for July, 1940. The ratio for June, 1941, was 64.3 percent. The chemical industry was the largest user of lime with shipments of 99,510 tons of quicklime and 27,603 tons of hydrate during July, 1941.

Above: Completely assembled tractor-truck and semi-trailer quarry haulage unit which is one of nine recently installed by Kelley Island Lime & Transport Co. Below: Enroute to plant. The nine semi-trailer assemblies were hauled on the tractor-truck chassis frame

In these days . . .

would you buy a gasoline that would give you twice the mileage and power—?

Yes—and you would be glad to pay a premium price for it, too.

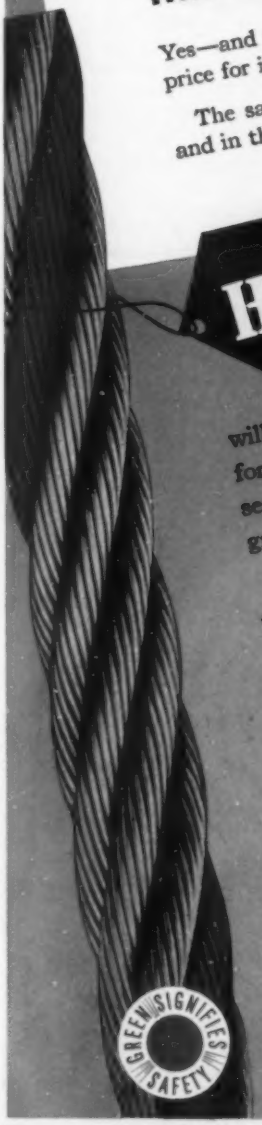
The same logic would apply to wire rope—and in that connection we offer—

HAZARD LAY-SET *Preformed*

● *Invariably*, Hazard LAY-SET Preformed will give far better and longer service, when compared with non-preformed rope. In many instances it has given much more than twice the service. The result is fewer machine shutdowns, steadier production, greater efficiency.

It is the preforming process which LAY-SET goes through at the mill that makes possible this superior service. Preforming relaxes the wires—relieves them of pent-up stresses—gives the rope extreme resistance to bending fatigue. It makes LAY-SET resist kinking and twisting; makes it easier, faster and safer to handle. It obviates the necessity for seizing the ends when being cut.

For longer and better rope service, for less "outage time" for machines and men, for greater safety to workmen—specify Hazard LAY-SET Preformed. All Hazard ropes identified by the Green Strand are made of Improved Plow Steel.



HAZARD WIRE ROPE DIVISION • WILKES-BARRE, PENNSYLVANIA

Established 1846

AMERICAN CHAIN & CABLE COMPANY, INC.

District Offices: New York, Chicago, Philadelphia, Pittsburgh, Fort Worth, San Francisco, Denver, Los Angeles, Atlanta, Tacoma

One Hundred Years

SEPTEMBER 19, 1941, marked the one hundredth anniversary of the founding of the John A. Roebling Sons Co. business—the manufacture of wire rope, and in recent years of many other products including electrical cable, woven wire screens and fabrics, etc. The occasion was suitably celebrated at the home of the company, Trenton, N. J., where the officers of the company entertained about 100 editors and publishers of the nation's leading business and technical journals. After a luncheon at the general offices, the visitors were shown through various parts of the plant. At the conclusion of the plant inspection, they were taken to the physical testing laboratory — a part of a large and complete research laboratory—and saw there the first test to breakage ever made of a 4-in. diameter wire rope. The breaking load was 1,400,000 lb. This size cable is being manufactured for 35-cu. yd. power shovels.

Leon Henderson, speaking at 100th anniversary banquet, John A. Roebling's Sons Co., facing William A. Anderson, president of the company

The story of the Roebling industry is typical of the development of American industry in general, with this exception, the Roebling industry has remained a family enterprise throughout the one hundred years. The business founded in 1841 by John A. Roebling is still largely in the hands of his descendants. It is very largely a Roebling family achievement.

The founder of the family in America was a German immigrant with an excellent engineering education, a graduate of the Polytechnic Institute in Berlin. He was a technically trained engineer before there was such a thing as a technical school in the United States. For a few years he was a farmer in a German community in Pennsylvania.

From an article in a German scientific journal he learned of the possibility of making rope of wire. On his Pennsylvania farm John A. Roebling experimented and by hand devices made the first wire rope in America. Subsequently a factory was established in Trenton with machinery designed and built by him. To develop markets for his wire rope he designed and built suspension bridges and other engineering structures—the Brooklyn Bridge was under construction by him at the time of his death. His son, Col. Washington A. Roebling, completed the Brooklyn Bridge and the company has continued to build suspension bridges including the Golden Gate Bridge, San Francisco, the greatest of them all.

The whole history of the company has been one of pioneering and developing new markets, no less than developing new products. Certainly the company's business would never have grown to present proportions had it not also been as active in developing markets as in improving manufacturing facilities.

Members of the technical press as they watched the breaking of a 4-in. Roebling rope that finally broke at about 800 tons

FINANCIAL NOTES

RECENT DIVIDENDS ANNOUNCED

Calaveras Cem. Co. pfd..	$ .75	Sept. 15
(arrears)	.10	Oct. 1
Canada Crushed Stone I	.10	Sept. 30
Consolidated Cem. A....	.73	Sept. 15
Coronet Phosphate Co...	1.00	Sept. 30
Florida Portland Cem. Co., 7% pfd.....	3.50	Sept. 20
General Refractories ...	.25	Sept. 24
Ideal Cement	.35	Sept. 30
Kelley Is. Lime & Trans.	.25	Sept. 30
Lone Star Cem. Corp....	.75	Sept. 30
Peerless Cement Corp. com.	.25	Oct. 3
Penn-Dixie Cem. Cp. 7% pfd. A (np) (arrears).	1.00	Oct. 1
Penna. Glass Sand.....	.25	Oct. 1
Penna. Glass Sand pfd..	1.25	Oct. 1
Santa Cruz P. C. Co....	.25	Oct. 1
Superior Port. Cem. pfd. A	.82½	Oct. 1
U. S. Gypsum.....	.50	Oct. 1
U. S. Gypsum 7% pfd...	1.75	Oct. 1
Yosemite Port. Cem. Cp. pfd.	.10	Oct. 1

PENNSYLVANIA GLASS SAND CORPORATION, Lewistown, Penn., showed a net profit of $838,001 for the year ended July 31, 1941, after depreciation, depletion, interest, amortization and provision of $418,784 for federal income and excess profits taxes.

•

UNITED STATES GYPSUM CO., Chicago, Ill., reported for the six months ended June 30, a net income of $3,211,826, equal after preferred dividends, to $2.46 a share on the common outstanding compared with $3,536,458, equal to $2.73 a share for the first half of 1940.

•

BASIC REFRACTORIES, INC., Cleveland, Ohio, had a net income of $389,114 for the six months ended June 30, 1941, before taxes, as against $200,494 for a like period in 1940.

•

ARUNDEL CORPORATION, Baltimore, Md., reported a net profit of $880,212 for the eight months ended August 31, 1941. This compares with $612,476 for the corresponding period in 1940.

•

STANDARD SILICA CORPORATION, Chicago, Ill., reported earnings for the six months ended June 30:

	1941	1940
Net sales	$301,299	$172,841
Costs, depreciation, etc.	216,001	146,579
Operating profit	85,298	26,262
Other income, net.....	3,044	525
Total income	88,342	26,787
Fed. tax (est.).....	[1]43,000	5,650
Net Profit	45,342	21,137
Dividends	58,050	25,813
Deficit for period.....	12,708	4,676
Earned per share.....	$0.35	$0.16
No. of shares.....	129,000	129,065

[1] Includes excess profits tax.

BASIC MAGNESIUM, INC., a subsidiary of Basic Refractories, Inc., Cleveland, Ohio, has awarded a contract to McNeill Construction Co., Los Angeles, for construction of a magnesium manufacturing plant on a site between Las Vegas and Boulder City, Nev. The project, financed with federal funds, will cost $63,000,000, of which $42,000,000 has been allocated for machinery and equipment.

•

SCHUMACHER WALL BOARD CORP., Los Angeles, Calif., reported a net profit of $68,648 for the three months to July 31, 1941, after charges and federal income and excess profits taxes. This compares with $33,959 for the same period in 1940.

•

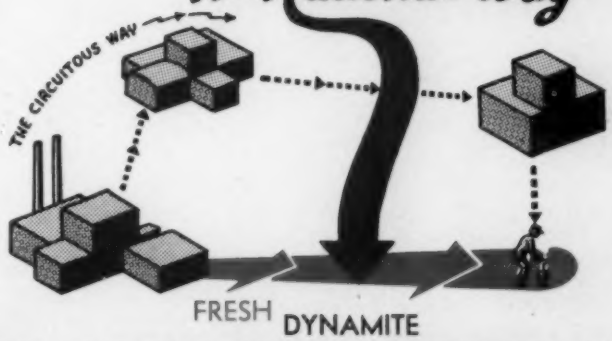
THE OHIO QUARTZ PRODUCTS CO. plant at Jackson, Ohio has been purchased by John E. McKelvey, Pittsburgh, Penn., from the court trustees. It is reported that the plant will soon be reopened.

HE PACKS HIS BEST PUNCH

WHEN HE IS FRESH!

So Does DYNAMITE ..!

The National Way



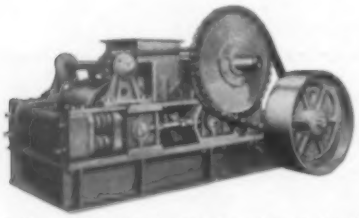
THE NATIONAL POWDER CO.

ELDRED • FACTORY-TO-YOU • PA.

NEW MACHINERY * NEW EQUIPMENT

Larger Roll Crusher

DIAMOND IRON WORKS, INC., Minneapolis, Minn., has added a larger size roll crusher to its present line of equipment. This unit is a 24- x 54-in.



Roll crusher designed to give a high rate of production

size, and very materially increases the tonnage rate. There are five other sizes of roll crushers available. The next largest size, 20- x 36-in., for example, has a production rate of 109.2 tons per hour with a 2-in. setting. This new unit meets the demand for a high production roll crusher.

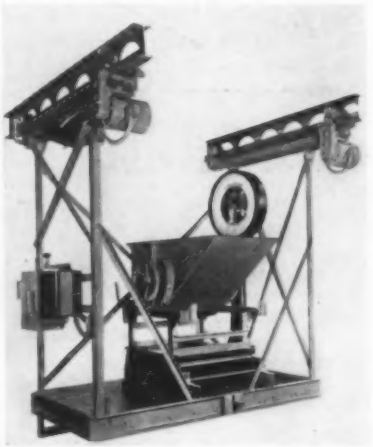
Cable for Tractor-Drawn Equipment

R. G. LETOURNEAU, INC., Peoria, Ill., has announced that it is manufacturing a cable known under the trade name of Tournarope. It is a 6 x 9 filler wire right lay wire rope with an independent wire rope center and an identifying galvanized core strand which has been developed especially for cable-operated, tractor-drawn equipment. The cable is made of 199 fine steel wires, and comes in six sizes: 3/8-in., 1/2-in., 9/16-in., 5/8-in., 3/4-in., and 7/8-in.

Traveling Batch Scale

THE CLEVELAND CRANE & ENGINEERING CO., Wickliffe, Ohio, announces that the Tramrail division has developed a traveling batch scale car. This unit is adaptable for the handling of batch materials used in a variety of industries.

Car is motor driven and controlled by an operator who rides on the platform space provided to the left of the bucket. A variable speed drum controller permits the car to be moved at any speed up to 300 f.p.m. Double overhead rails make it possible to straddle overhead bins so that their chutes may be brought close to the car bucket. The unit makes it possible to gather the exact amounts from various bins that go to make up



Batch loads of one-half ton are handled in this size unit

a batch. The scale on the car accurately weighs the ingredients as they are dumped in.

Yard Crane With Gooseneck Boom

BUCKEYE TRACTION DITCHER CO., Findlay, Ohio, is now offering a yard crane with a short gooseneck boom which is said to provide greater stability under heavy loads, and facilitates car loading and unloading and working in close quarters. A gooseneck on the end of the boom permits handling of lengthy objects in confined space despite the short boom.

All operations in the work cycle of the crane, such as swing, boom raising or lowering and load hoisting, are controlled by vacuum power. Other features include: 175 f.p.m. minimum hoist speed; welded steel box type boom; safety power drum brakes; minimum of 5.25 r.p.m. full swing; and quick convertibility to shovel or dragline. Three models are available: model 50, 5-ton; model 60, 6½-ton; and model 70, 7-ton capacity.

Truck Turntables

BLAW-KNOX CO., Pittsburgh, Penn., has brought out a turntable for the use of trucks which are required to operate in closely confined areas, eliminating backing and turning.

As shown in the illustration, the turning mechanism is simplicity itself, consisting of a circular pan or "sled," and the whole table turns on

Driver operating truck turntable

this sled. Both single and double end turntables are furnished, in capacities up to 27 tons gross load, and one

Crane with gooseneck boom provides greater stability under heavy loads

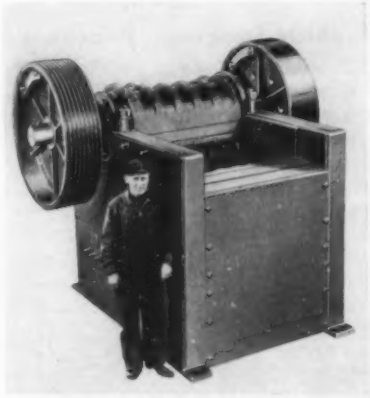
man can turn a loaded table. Ramps are always furnished with the single end turntables, and these are attached at one end with a bumper rail provided at the opposite end. One model of the single end turntable includes a hinged ramp. Steel ramps at each end can be provided for double end turntables, if desired, or the purchaser can build his own ramps of wood from detail drawings furnished by the Blaw-Knox Co.

Crushing plant, comprising three units, has a capacity of 150 to 200 tons per hour

Streamlined Jaw Crusher

PIONEER ENGINEERING WORKS, Minneapolis, Minn., is now making a larger size jaw crusher. It is 30- x 42-in., and has been streamlined in design. The base is of welded steel.

A feature of this crusher is a different type eccentric for this size



Man standing alongside jaw crusher shows the size of this 30- x 42-in. unit

crusher. It has SKF self-aligning, spherical roller bearings, manganese steel jaws, and a worm and gear adjusting mechanism.

Portable Air Compressor

SULLIVAN MACHINERY CO., Michigan City, Ind., has designed what has been called the Zephair compressor. The two-wheel, pneumatic-tired model tows conveniently behind a passenger automobile at regular traffic speeds. It is built for one-man

Taking the compressor to the job

handling and can be operated by the drill runner. The skid type can be set up in a pick-up truck, leaving room for drills and other equipment. Capacities of this model are 60 c.f.m., 85 c.f.m., and 105 c.f.m.

Installs Annealing Furnace

JOSEPH T. RYERSON & SON, INC., Chicago, Ill., has installed a modern, 24-ft. annealing furnace for annealing their stock steel products after they have been flame cut.

Prevent Accidents from Projecting Rods

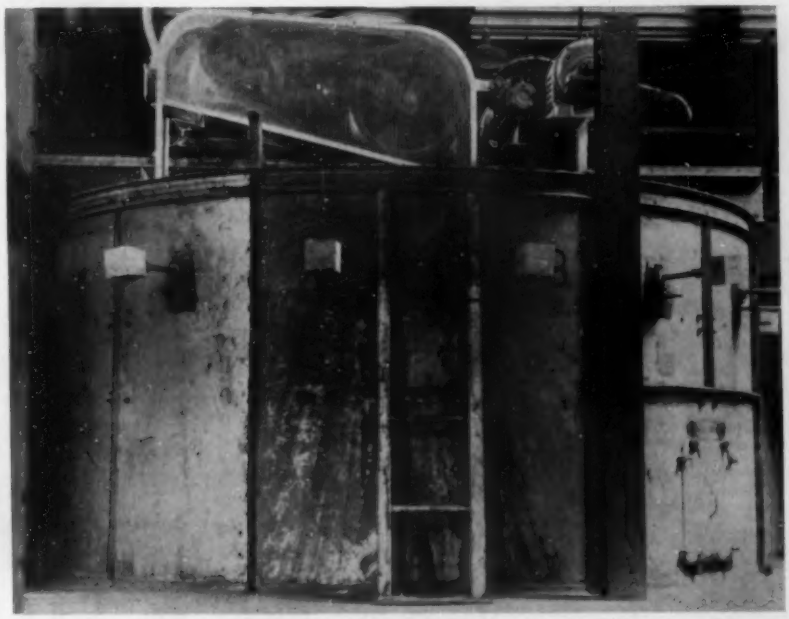
THE B. F. GOODRICH CO., Akron, Ohio, has reported an unusual use for its air-cell latex foam material. At a large cement plant there are four Sturtevant air separators. On each machine are a number of small dimension steel rods used for adjusting the vanes on the inner surfaces of the machines. These rods stick out beyond the surface of the machine. To prevent workmen from striking them accidentally, with possible injury, each of the rods has been encased with a pad of the latex foam.

Large Portable Crusher

IOWA MANUFACTURING CO., Cedar Rapids, Iowa, has increased the size of its Morok portable crushing plant so that it now has a capacity of from 150 to 200 tons per hour.

It is built in three major units, each mounted on pneumatic tired trucks. The primary unit with its heavy duty rock feeder and jaw crusher handles rock direct from the quarry. A belt conveyor takes the crushed material from the primary unit to the secondary plant. This unit is equipped with a roller bearing roll crusher, a secondary jaw crusher and a 4- x 12-ft. horizontal vibrating screen. Aggregate from the secondary plant is conveyed to the bin unit, where a second 4- x 12-ft. screen does the final grading over the 40-cu. yd. compartment bin. Bin compartments have gates for discharging to trucks. Power for operation may be all-electric or a combination of Diesel plus electric.

The equipment illustrated above is adaptable to isolated locations.



Air separator having the ends of projecting rods covered with air-cell latex foam material to prevent accidents

Largest? Heaviest? or Don't Stick Your Neck Out

THE EDITOR stuck his neck way out in the New Machinery columns of ROCK PRODUCTS, p. 87, August issue, when he captioned a 60-in. gyratory crusher as the "Largest Gyratory Crusher." We are reminded by the Allis-Chalmers Manufacturing Co. that it has four 60-in. gyratory crushers in operation, two built in 1927 and two in 1930.

The "largest" crusher claim appears to be based on the total shipping weights of approximately 1,000,000 lb. each. We give the comparative statistics of the two makes, so far as these are available:

Main shaft and mantle	180,000*	142,000†
Top shell	160,000*	300,500†
Bottom shell	215,000*	176,000†
Spider	61,000*	100,000†
Driving gears	6,500*	.....
Eye bolt (for lifting shaft)	1,000*	.....
	623,500*	718,500†

* Approximate weights only.
† Catalog description.

It will be noted that one set of figures quoted do not include the driving gears or the eye bolt, and neither apparently includes the assembly bolts, babbit metal and other incidentals of the complete crusher.

Our own conclusion is that while the manufacturers distributed the metal in different parts, the total shipping weights of the two crushers were evidently about the same.

Allis-Chalmers claims a capacity of 2000 to 2500 tons for its 60-in. crusher (which it is claimed has actually crushed 2900 tons) per hour. The capacity figures, of course, are not very enlightening because we don't know the crusher settings or the relative crushing characteristics of the two materials.

So, the editor apologizes for sticking his neck out!

Revise Record-Keeping Regulations of Wage Law

REVISION of the record-keeping regulations under which 350,000 employers must keep payroll and other records concerning more than 15,500,000 workers has been announced by Gen. Philip B. Fleming, Administrator of the Wage and Hour Division, U. S. Department of Labor. In some cases they have been simplified and in others they require more information. One of the new requirements, for example, states that "each employer shall . . . preserve for at least two years from the last date of entry the originals or true copy of any and all customer orders or invoices received, incoming or outgoing shipping or delivery records, as well as all bills of lading, and all billings to customers (other than cash) which the employer retains or makes in the course of his business or operations."

Celebrates 50th Anniversary

CHAIN BELT CO., Milwaukee, Wis., is celebrating this year its 50th anniversary. September 9 was the date of the birthday party. The company was founded in 1891 for the purpose of producing an improved type of detachable chain, then used largely on agricultural machinery, but it has since expanded its activities until now it makes a wide variety of material handling products, concrete mixers, pavers, pumps, and transit mixer units for concrete.

Asphalt Shortage Forecast

AS A RESULT of the heavy buying by Federal agencies for army cantonments and airports, it is reported that a shortage of asphalt is expected along the Atlantic seaboard. The asphalt industry is not now subject to priorities, but some producers anticipate that the need for them will arise shortly.

Trade DEMPSTER DUMPSTER Mark
Reg. No. 353486

Our entire organization, and plant, is exerting its complete effort in and for the National Defense Program.

We suggest that for operations where any materials are being furnished for defense work, and where efficiency can result in the reduction of hauling costs as much as 50%, that such plants follow the example set by many of the world's largest producers and install DEMPSTER-DUMPSTER-BUCKETRUX, the hauling unit with a multiplicity of detachable bodies.

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Keep Your Machinery on the job with COLMONOY

You can't operate 24 hours a day and stop for many repairs. Use COLMONOY to hard-surface such wearing parts as conveyor screws, pulverizing hammers, gudgeons, clinker plows, crusher teeth, feeder sprockets and all other parts subject to excessive abrasion. Easy to apply. There's a grade for every hard-facing need.

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Full information on the various grades of COLMONOY for every hard surfacing requirement.

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Hard Surfacing Alloys and Overlay Metals

On the Labor Front

SETTLEMENT of the United States Gypsum Co. 10-week strike was brought about through the efforts of the Defense Mediation Board when the CIO voted to return to work under a 30-day truce while the National Labor Relations Board investigates and attempts a settlement of the disputed issues. Seventeen of the company's plants had been closed since June 26, and it is reported that 40 percent of the national defense production of some housing materials had been curtailed. Pickets at the Port Clinton, Ohio plant who were charged with violation of a court injunction are now up for trial. Owen D. Young has been named special representative of the National Defense Mediation Board to investigate the strike issues.

•

AFTER a conference with Michael Brisch, president of the Rockwell Lime Co., employes of the plant near Manitowoc, Wis., agreed to return to work. The pay rate was increased from 45 to 55c per hour, and vacations with pay were granted.

•

HERZOG LIME AND STONE Co. has resumed operation at its plant near Kenton, Ohio, following the signing of a new wage contract with local 137, United Cement, Lime and Gypsum Workers International Union. A 40-hour week with time and a half for overtime and for Sundays and holidays was agreed upon, except when the time comes under the continuous operation schedule which is used in some phases of plant work. The demands for a closed shop and check-off were not granted. The base rate for common labor was set at 47c per hour for the first year, and 50c an hour thereafter.

•

EMPLOYES of the Lehigh Portland Cement Co., Fordwick, Va. plant, voted against affiliating with the A. F. of L., and will organize their own union.

•

AMERICAN LIMESTONE Co., Mascot, Tenn. plant, has signed a CIO contract providing for a check-off of union dues, and seniority rights renewal. The contract expires May 31, 1942.

•

PETOSKEY PORTLAND CEMENT Co., Petoskey, Mich., is reported to have signed a contract with local 306, United Construction Workers Organizing Committee, providing for an 8c an hour wage increase.

•

AETNA PORTLAND CEMENT Co., Bay City, Mich., has signed a contract with local 214, United Construction Workers Organizing Committee, granting a union shop and a 10 percent pay increase for the men.

•

READY MIXED CONCRETE truck drivers in St. Paul, Minn., recently went out on strike for a 10c an hour increase in pay. The demand was for 85c an hour.

•

FRANCE STONE Co., Monroe, Mich., plant, has been tied up by a strike. It is reported that the plant has been picketed by A. F. of L. truck drivers.

Spanish Cement Magazine Resumes Publication

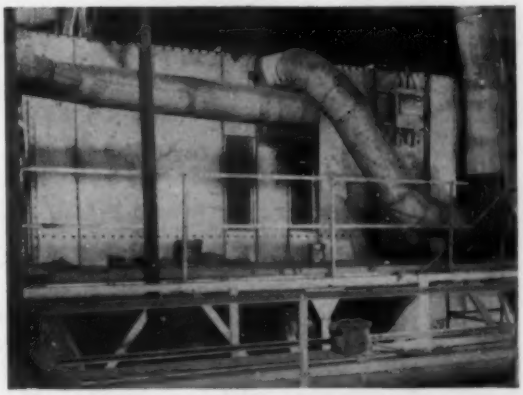
CEMENTO, technical publication dealing with the cement manufacturing industry of Spain, has resumed publication at Barcelona after a suspension caused by the recent Spanish Civil War in which many of the plants were destroyed. Many of these plants have been rebuilt.

Merger

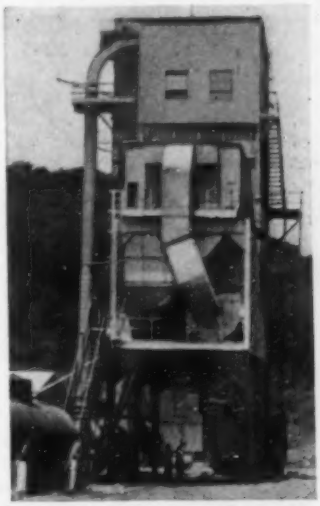
THE HIGH GRADE SAND AND GRAVEL Co. has been taken over by the Hamilton and Gleason Co., Denver, Colo.

PARSONS OVAL BAG Dust ARRESTORS

Stop the dust nuisance and turn it into Profit!



Continuous Operating Oval Bag Dust Arrestor serving finish mill of Cement Plant



Collecting Dust at Stone Crushing Plant

● **The fines collected from dust in rock crushing plants, cement plants, etc., HAVE A DEFINITE SALES VALUE.**

So when you collect dust at its source you not only improve working conditions, protect the moving parts of your equipment and keep your plant clean, but can sell the collected fines at a PROFIT that will soon cover the cost of a dust arrestor installation.

THE PARSONS OVAL BAG DUST ARRESTOR is outstanding in performance. The OVAL BAGS stay "NEW" in filtering capacity because they will not plug, even when handling dust from moist materials, and need no replacement for an average of more than ten years. The working parts and case, too, are sturdily constructed for long life. ***Write for BULLETIN DA-6.***

Complete Line of Dust Arrestors

Continuous Automatic—Oval Bag Type—Unit Type—All-Metal Parclone Centrifugal.

Built by

PARSONS ENGINEERING CORP.

CLEVELAND, OHIO

THE NAME PLATE THAT MEANS QUALITY

PARSONS

Federal Contract Awards

AWARDS made by Federal governmental agencies to rock products companies for the period from August 4 to September 6 as reported by the Division of Public Contracts, Department of Labor, are as follows:

Cement

† Indefinite Amounts

California Portland Cement Co., Los Angeles, Calif., Int., $100,800.

Southwestern Portland Cement Co., Los Angeles, Calif., Int., $164,160.

Olympic Portland Cement Co., Ltd., Seattle, Wash., War, $36,207.

Alpha Portland Cement Co., Birmingham, Ala., from Bear Lumber Co., Montgomery, Ala., WPA, $12,100.

Signal Mountain Portland Cement Co., Chattanooga, Tenn., WPA, $11,799.

Alpha Portland Cement Co., Birmingham, Ala., War, $125,407.

Marquette Cement Mfg. Co., Chicago, Ill., War, $54,750.

†Riverside Cement Co., Los Angeles, Calif., WPA.

†California Portland Cement Co., Colton, Calif., WPA.

Lehigh Portland Cement Corp., Allentown, Penn., from Ricardo R. Pesquera, San Juan, P. R., WPA, $20,500.

Florida Portland Cement Co., Tampa, Fla., War, $22,400.

Keystone Portland Cement Co., Inc., Philadelphia, Penn., WPA, $22,426.

Riverside Cement Co., Los Angeles, Calif., Int., $155,000.

Sand and Gravel

Fairfax Sand & Crushed Stone Co., Thomas, W. Va., WPA, $24,000.

Southeastern Sand & Gravel Co., Inc., Tallassee, Ala., War, $14,000.

Roquemore Gravel & Slag Co., Montgomery, Ala., War, $12,750.

Muskogee Sand Co., Muskogee, Okla., WPA, $11,401.

Lyman-Richey Sand & Gravel Corp., Omaha, Nebr., WPA, $12,240.

Alaska General Equipment Co., Ketchikan, Alaska, War, $53,550.

Crushed Stone

East St. Louis Stone Co., East St. Louis, Ill., from Commercial Fuel & Service Co., Belleville, Ill., War, $22,100.

Heafey-Moore Co., Oakland, Calif., from L. M. Clough Co., Oakland, Calif., WPA, $30,000.

Superior Stone Co., Raleigh, N. C., WPA, $21,825.

D. G. Chestnut, Chamblee, Ga., WPA, $20,995.

Connell & Shultz, Inverness, Fla., WPA, $10,800.

L. W. Webber, Clinton, Tenn., TVA, $14,000.

Bituminous Mixtures

* Airports.

L. S. Defelice & Son, Inc., New Haven, Conn., WPA, $43,650.

Halton Amiesite Co., Inc., Mt. Vernon, N. Y., $19,625.

The Sicilian Asphalt Paving Co., New York, N. Y., WPA, $11,020.

Koppers Co., Carrollville, Wis., from Payne & Dolan of Wisconsin, Inc., Milwaukee, Wis., WPA, $39,264.

The United Contracting Co., Portland, Ore., WPA, $24,111.

Simplicity Asphalt Co., Washington, D. C., from McGuire & Rolfe, In., DC, $29,888.

Southern New England Contractors' Supply Co., New London, Conn., WPA, $89,375.

Perkins Gravel Co., Sacramento, Calif., WPA, $80,237.

Florida Crushed Stone Co., Leesburg, Fla., WPA, $156,000.

Gifford-Hill & Co., Inc., Alexandria, La., WPA, $17,500.

Tri-State Asphalt Corp., Wheeling, W. Va., WPA, $10,965.

H. P. Streicher, Toledo, Ohio, WPA, $11,882.

A. L. Blades & Sons, Hornell, N. Y., WPA, $23,467.

Macasphalt Corp. of America, Flushing, N. Y., WPA, $84,568.

Bituminous Prod. Corp., Buffalo, N. Y., WPA, $25,920.

*Warren Bros. Roads Co., Cambridge, Mass., WPA, $115,068.

*Maine Bituminous Corp., Augusta, Maine, WPA, $54,642.

*The Lane Construction Corp., Meriden, Conn., WPA, $55,268.

*Warren Bros. Roads Co., Cambridge, Mass., WPA, $134,877.

*Maine Bituminous Corp., Augusta, Maine, WPA, $104,702.

*Warren Bros. Roads Co., Cambridge, Mass., WPA, $196,328.

Marion Contracting Co., Ocala, Fla., WPA, $18,200.

Interstate Amiesite Co., Martinsburg, W. Va., WPA, $18,795.

Warren Bros. Roads Co., Birmingham, Ala., FWA, $16,901.

*Ben M. Hogan, Greenwood, Miss., WPA, $15,592.

Wright Construction Co., Inc., Meridian, Miss., WPA, $18,399.

Merrill Engineering Co., Jackson, Miss., WPA, $13,202.

Mississippi Materials Co., Jackson, Miss., WPA, $25,641.

Asphalt Application Co., Jackson, Miss., WPA, $31,080.

Whites Uvalde Mines, San Antonio, Texas, WPA, $14,094.

Texas Bitulithic Co., Dallas, Texas, WPA, $22,877.

(Continued on page 94)

YESTERDAY'S WISE DECISION *bears fruit today*

"Yesterday's decision" by many plant operators to buy Cincinnati Conveyor Belts may have been made one, two, or five years ago, but that wise decision is certainly bearing fruit today. In innumerable plants where production has been speeded up to an all time high, Cincinnati Conveyor Belts are carrying great tonnage . . . they're giving remarkable performance under abnormal conditions of national defense.

Where Cincinnati Conveyor Belts are on the job, materials are being conveyed smoothly . . . efficiently . . . without a hitch, and plant operators are saying proudly, "Our Cincinnati Conveyor Belts are doing a great job."

The Cincinnati Rubber Mfg. Co., Cincinnati, O.

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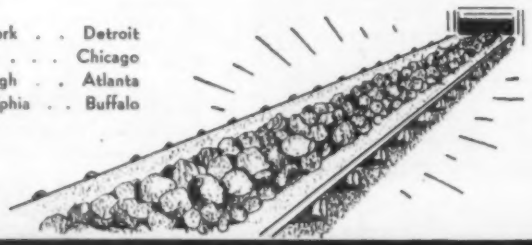

CINCINNATI CONVEYOR BELTS

To see a LIMA in rock is proof that there is no better shovel made for rock digging. Why? Because the design is right. The truck and revolving bases are both steel castings, especially designed to withstand the severe shocks imposed upon them in hard digging; the chain crowd is positive with power to hold the dipper to the work without coaxing; the big husky engine—gasoline, Diesel or oil—has the power that guarantees big output, and the front-end equipment—boom, dipper handle and dipper—have been proved dependable on the toughest rock jobs all over the country.

In addition to the above advantages, LIMA quarry shovels have roller bearings throughout, helical cut gears and a clutch control that makes operating a pleasure.

For your own protection, better make your next excavator a LIMA.

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SEATTLE, WASH. SPOKANE, WASH. SAN FRANCISCO, CALIF. LOS ANGELES, CALIF.
MEMPHIS, TENN. MONTREAL, Quebec, Can. VANCOUVER, B.C.

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LIMA TYPE 750
OWNED BY
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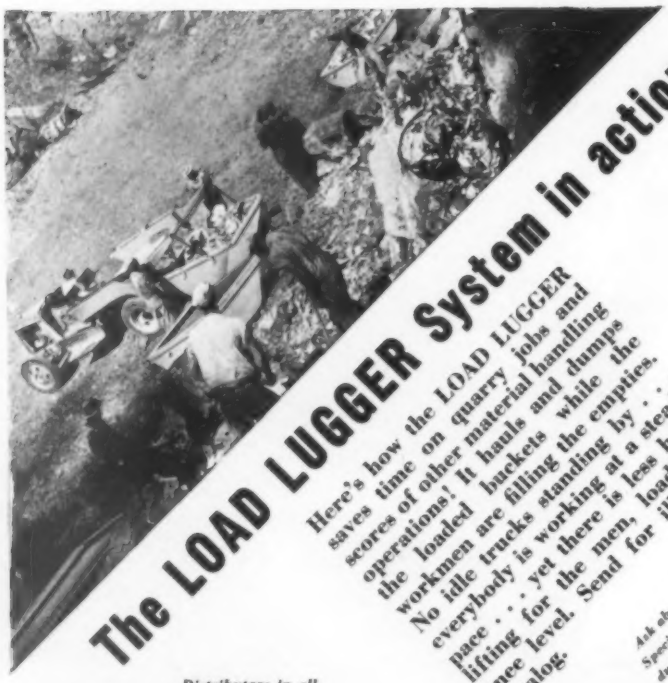
deliver a higher quality concrete

Ransome Truck Mixers and Agitators will help you keep customers satisfied by delivering a higher quality concrete. Let us tell you about Ransome's reasons for superior performance.

RANSOME CONCRETE MACHINERY COMPANY
DUNELLEN NEW JERSEY



The LOAD LUGGER System in action!

Here's how the LOAD LUGGER saves time on quarry jobs and scores of other material handling operations! It hauls and dumps the loaded buckets while the workmen are filling the empties. No idle trucks standing by . . . everybody is working at a steady pace . . . yet there is less heavy lifting for the men, loading at knee level. Send for illustrated Catalog.

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TRADE MARK KEYSTONE REGISTERED U. S. PATENT OFFICE

1-YARD and 1¼ YARD

Keystone offers a standard *1¼ yard dipper and crane, Model 19-A* for rock excavation and quarry clean-up. *Model 18-A, 1-yard,* is adapted for special service—*trench hoes* for crevice cleaning upon serrated rock strata; *skimmers* for sand-strata separation and recovery, etc. . . . we have had a long and varied experience in handling difficult and unusual excavation problems. Ask for bulletins.

ROCK SHOVELS
DIPPERS
BACK HOES
SKIMMERS
DRAG LINES
CRANES

KEYSTONE DRILLER CO.
Beaver Falls, Penna.

Servtex Materials Co., New Braunfels, Texas, WPA, $24,566.

The Leverty & Hurley Co., Bridgeport, Conn., WPA, $53,520.

Hayward Building Material Co., Hayward, Calif., WPA, $29,422.

Callan Construction Co., Bristol, R. I., WPA, $25,442.

Strong-Mix Co., Inc., Flushing, Long Island, N. Y., WPA, $12,000.

MacAsphalt Corp., of America, Flushing, N. Y., WPA, $43,391.

McGuire & Rolfe, Inc., Washington, D. C., WPA, $13,650.

Edward M. Chadbourne, Pensacola, Fla., WPA, $15,584.

Servtex Materials Co., Ogden, Texas, from R. E. Janes Gravel Co., WPA, $52,318.

Phosphates

Dunnellon Phosphate Mining Co., Savannah, Ga., Treas., $48,000.

Southern Phosphate Corp., Baltimore, Md., Treas., $404,500.

International Agriculture Chemical Co., New York, N. Y., Treas., $135,000.

The American Agriculture Chemical Co., New York, N. Y., Treas., $271,800.

Coronet Phosphate Co., New York, N. Y., Treas., $21,400.

American Cyanamid Co., New York, N. Y., Treas., $91,350.

Slag

†Indefinite

Woodstock Slag Corp., Birmingham, Ala., WPA, $10,710.

† Tennessee Coal, Iron & Railway Co., Birmingham, Ala., from Louisiana Agricultural Cooperative, Inc., Baton Rouge, La., Agri PS&T.

Standard Slag Co., Youngstown, Ohio, from Hall & Barber, Cambridge, Ohio, WPA, $10,420.

Birmingham Slag Co., Birmingham, Ala., War, $36,916.

The Buffalo Slag Co., Buffalo, N. Y., WPA, $56,680.

Concrete Pipe

* Indefinite Amount.

† Asbestos Cement Pipe.

Valley Concrete Pipe & Products Co., Yuba City, Calif., WPA, $17,046.

Kammerer Concrete Products Co., East Peoria, Ill., WPA, $10,024.

Baker Concrete Pipe Co., Bethany, Okla., WPA, $22,299.

Faulkner Concrete Pipe Co., Mobile, Ala., War, $18,584.

Independent Concrete Pipe Corp., Indianapolis, Ind., WPA, $13,491.

Shearman Concrete Pipe Co., Montgomery, Ala., War, $14,375.

La Grande Concrete Pipe Co., La Grande, Ore., WPA, $12,792.

*Helms Concrete Pipe Co., Inc., Alexandria, Va., DC.

*Gray Concrete Pipe Co., Arlington, Va., DC.

†Keasbey & Mattison Co., Ambler, Penn., War, $20,966.

†Johns-Manville Sales Corp., Philadelphia, Penn., War, $21,625.

Universal Concrete Pipe Co., New Martinsville, W. Va., WPA, $18,570.

Collins Concrete & Steel Pipe Co., Portland, Ore., WPA, $11,772.

Shearman Concrete Pipe Co., Montgomery, Ala, WPA, $12,312.

Lock Joint Pipe Co., East Orange, N. J., WPA, $12,870.

Gravel Products Co., Buffalo, N. Y., WPA, $21,644.

Miller Concrete Pipe Co., Valdosta, Ga., WPA, $10,831.

Falkner Concrete Pipe Co., Hattiesburg, Miss., WPA, $19,138.

Sherman Concrete Pipe Co., Knoxville, Tenn., TVA, $11,195.

Lock Joint Pipe Co., North Kansas City, Mo., War, $70,742.

Elk River Concrete Products Co., Minneapolis, Minn., and North Star Concrete Co., Inc., Mankato, Minn., WPA, $52,824.

Concrete Sectional Culvert Co., Fargo, N. D., WPA, $11,880.

Ready Mixed Concrete

Howat Concrete Co., Inc., Washington, D. C., WPA, $80,500.
The Bridgeport Concrete Co., Bridgeport, Conn., WPA, $11,440.
Ready Mix & Supply Corp., Albany, N. Y., WPA, $128,520.
Buffalo Slag Co., Inc., Buffalo, N. Y., WPA, $16,168.
Maloney Materials Corp., New York, N. Y., WPA, $13,671.
M. F. Hickey Co., Inc., Brooklyn, N. Y., WPA, $29,344.
James A. Norton, Inc., New York, N. Y., WPA, $11,229.
Road Material Corp., West Brighton, S. I., New York, WPA, $81,810.
Breslin Construction Co., Louisville, Ky., WPA, $18,704.
Ready Mixed Concrete Corp., Indianapolis, Ind., WPA, $27,400.
Noonan Construction Co., Pensacola, Fla., WPA, $14,840.
Ready Mixed Concrete Corp., Indianapolis, Ind., WPA, $35,875.

Agricultural Limestone

Indefinite Amounts
(Agri P S & T and AAA)

Basic Dolomite, Inc., Cleveland, Ohio.
Bellefonte Stone Products Corp., New York, N. Y.
Michigan Limestone & Chemical Co., Buffalo, N. Y.
Newport Lime Co., Newport, N. Y., from Claude Gleasman, West Leyden, N. Y.
Worlock Stone Co., Perryville, N. Y.
The Solvay Process Co., Solvay, N. Y.
Wickwire Spencer Steel Co., Gasport, N. Y.
Marl Lake Co., Yorkshire, N. Y.
Canoga Lime Co., Canoga, N. Y., from Elmer G. Porter, Caywood, N. Y.
Limestone Products Corp., of America, Newton, N. J.
Kelley Island Lime & Transport Co., Cleveland, Ohio, from John W. Campbell, St. Clairsville, Ohio.
Thornton Quarries, Inc., Thornton, Ill., from Carl Jensen, Hamlet, Ind.
Southern Ohio Quarries, Peebles, Ohio from Millard Doyle, West Union, Ohio.
France Stone Co., Logansport, Ind., from Arthur Weber, Rochester, Ind., William Luse, Logansport, Ind., Evert Rockhill and Alpha Overmeyer, Rochester, Ind.
Hall & Riley, Kirksville, Mo., From Adair County Soil Cons. Assoc.
Dixon Construction Co., Centerville, Ia.
Sheets and Wells, West Liberty, Ky.
D. L. Walker & Co., Lexington, Ky.
Marianna Limestone Co., Marianna, Fla.
Florida Dolomite Co., Dolomite, Fla.
Dixie Lime Products Co., Lebanon, Fla.
Swanton Lime Works, Inc., Swanton, Vt.
Butler County Stone Co., Morgantown, Ky.
Richland Lime Co., Pulaski, Tenn.
Vermarco Lime Co., West Rutland, Va.
Solvay Sales Corp., Syracuse, N. Y.
Virginia Dept. of Agriculture, Richmond, Va.
J. A. Holmes, Big Stone Gap, Va.
James River Hydrate & Supply Co., Indian Rock, Va.
Rockland-Rockport Lime Co., Inc., Rockland, Maine.
Lawrence Portland Cement Co., Thomaston, Maine.
Patterson Limestone Products Co., Inc., Scarsdale, N. Y.
Cobbleskill Limestone Products Corp., Cobbleskill. N. Y.
Highland Grand Limestone, Co., Inc., Monterey, Va.
Ralph H. Lovell, Ooltewah, Tenn.
Maymead Lime Co., Shouns, Tenn.
Memphis Stone & Gravel Co., Memphis, Tenn.
Wilbur Morton, Dayton, Tenn.
Oölitic Mining Co., Anderson, Tenn.
J. W. Pettit, Quebeck, Tenn.
Universal Exploration Co., Jefferson City, Tenn., and American Limestone Co., Mascot, Tenn., from Grady Phillips, Rutledge, Tenn.
Harry B. Phillips, Hillsboro, Tenn.
C. C. Langford, Gallatin, Tenn., from G. C. Pond, Cottontown, Tenn.
R. E. Poteet, Algood, Tenn.
J. A. Shipman, Clifton, Tenn.
Universal Exploration Co., Jefferson City, Tenn., from Howard S. Spoone, Morristown, Tenn.; B. C. Curry Dandridge, Tenn.; R. C. Livingston, Morristown, Tenn.
C. A. Langford, Gallatin, Tenn., from Seal Starks, Cottontown, Tenn.
Tennessee River Marble Producers, Parsons, Tenn.
Volunteer Lime & Stone Products Co., Kingsport, Tenn.
Ralph J. Yoakum, Jacksboro, Tenn.
Humphries County Lime Co., McEwen, Tenn.
Johnson Bros., Lafayette, Tenn.
W. J. Langford, Gallatin, Tenn.
Gager Lime Mfg. Co., Sherwood, Tenn., from F. J. Fandrich & Sons, Belvidere, Tenn.; Otis Garner, Dechard, Tenn.; Cole & Yarbrough, Winchester, Tenn.
American Limestone Co. and Universal Exploration Co., from Daniel and Ernest Fielden, Andersonville, Tenn.; Universal Zinc Co., Jefferson City, Tenn., from Bill Finchum, Dandridge, Tenn.
Franklin Limestone Co., Nashville, Tenn.
Monsanto Chemical Co., Siglo, Tenn.
R. W. Gaunt Co., Fayetteville, Tenn.
E. H. Gilbreath, Jaspar, Tenn.
American Limestone Co., Knoxville, Tenn., from C. G. Hodge, Rutledge, Tenn.; Joe Housholder, Pigeon Forge, Tenn.; Floyd H. Dearstone, Greenville, Tenn.; B. E. Brown, Oliver Springs, Tenn.; K. L. Raley, Maynardsville, Tenn.; L. W. Webber, Clinton, Tenn.; J. H. Carson, Maryville, Tenn.; Arthur B. Fain, Sevierville, Tenn.
Columbia Quarry Co., St. Louis, Mo.
Erin Lime & Stone Co., Erin, Tenn.
T. R. Akins and C. W. Hart, Pikeville, Tenn.
Jesse Allen Lime Co., Burns, Tenn.
Anderson Stone Co., Clarksville, Tenn.
Fred J. Bickford, Pikeville, Tenn.
Porter Brown Limestone Co., Springfield, Tenn.
Bruceton Lime Co., Bruceton, Tenn.
Cedar Bluff Quarry, Princeton, Ky.
Cerulean Stone Co., Cerulean, Ky.
E. D. Cherry, Celina, Tenn.
Collier Bros, McMinnville, Tenn.
Kentucky-Virginia Stone Co., Middlesboro, Ky.
F. M. Jarrell, Manchester, Tenn.
D. U. Smith & Bros., Ashley Falls, Mass.
Racex Lime & Fuel Corp., Catskill, N. Y.
U. S. Gypsum Co., Falls Village, Conn., and Farnams, Mass.
Hoosac Valley Lime Co., Inc., Adams, Mass.
Conklin Limestone Co., Inc., Canaan, Conn.
Lee Lime Corp., Lee, Mass.
Clifford L. Miller, West Stockbridge, Mass.
Green Mountain Lime Corp., Winooski, Vt.
Champlain Valley Lime Co., Winooski, Vt.
Harris Lime Co., Saylesville, R. I.
Acme Limestone Co., Ft. Spring, W. Va.
Basic Dolomite, Cleveland, Ohio.
The Bertha Mineral Division, of The New Jersey Zinc Co., Austinville, Va.
Cisco Lime Co., Parkersburg, W. Va.
Fairmont Limestone Co., Fairmont, W. Va.
Falling Spring Lime Co., Inc., Falling Spring, Va.
Farmers Lime Co., Princeton, W. Va.
Fred Holpp, Belmont, W. Va.
Hampshire Builders Supply Co., Romney, W. Va.
Liberty Limestone Corp., Rocky Point, Va.
National Lime & Stone Co., Findlay, Ohio.
Brown Neel, Gap Mills, W. Va.
Southern Ohio Quarries Co., Columbus, Ohio.
Tygart Valley Association, Dailey, W. Va.

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Preformed
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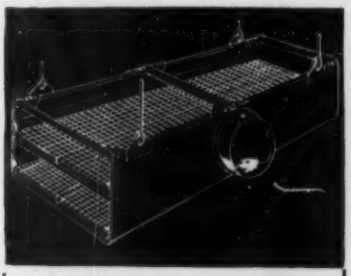

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2926-28 West Lake St., Chicago, Ill.

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With weight and rate recording features

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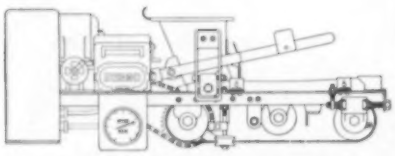


HARDINGE
COMPANY, INCORPORATED — YORK, PENNSYLVANIA
NEW YORK, CHICAGO, SAN FRANCISCO, TORONTO

Record Phosphate Sales

ALTHOUGH exports of phosphate fell off sharply, shipments of phosphate rock from American mines were larger in the first half of 1941 than in like periods of former years since 1937. Total shipments from mines for the first six months of 1941 rose to 2,097,794 long tons valued at $6,738,529 compared with 1,766,732 tons valued at $5,352,009.

Production estimates from the Tennessee field indicate that the 1941 figure will be well over a million tons. Although a fourth of this tonnage is low grade material (50 to 55 %BPL), which could not be shipped several years ago, it now enters largely into furnace production of elementary phosphorus at Monsanto, Mt. Pleasant, and Muscle Shoals. Reduction of the total to a 70 percent basis would leave around a million tons compared with the old time high of 700,000 tons in 1930. Extensive changes are being made in the Hoover & Mason Phosphate Co. plant.

Crushed Stone

A. T. GOLDBECK, engineering director, National Crushed Stone Association, in a recent bulletin reported that the Division of Simplified Practice Recommendation R147-33 on Wire Diameters for Mineral Aggregate Production Screens is to reconsider the standards. A letter ballot has been sent out to the members to determine what changes may be desirable. As a member of the Standing Committee for Simplified Practice Standard, R147-33, Mr. Goldbeck desires to get the reaction of the industry before making his recommendation to the committee.

Cement Shipments Exceed Production

BUREAU OF MINES reports that the portland cement industry in July, 1941, produced 16,000,000 bbl., shipped 16,687,000 bbl. from the mills, and had in stock at the end of the month, 21,178,000 bbl. Production and shipments of portland cement in July, 1941, showed increases of 30.2 and 24.1 percent, respectively, as compared with July, 1940. Portland cement stocks at mills were 7.3 percent lower than a year ago. The mill value of the shipments, 71,644,000 bbl., in the first half of 1941, is estimated as $105,440,000. Shipments totals for the first half of 1941 include approximately 3,018,000 bbl. of high-early-strength portland cement with an estimated mill value of $5,606,000.

In the following statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 157 plants at the close of July, 1941, and of 160 plants at the close of July, 1940.

RATIO (PERCENT) OF PRODUCTION TO CAPACITY

	July 1940	July 1941	June 1941	May 1941	Apr. 1941
The month	55.9	74.9	74.0	69.4	59.3
12 months	47.9	59.6	58.3	57.4	56.5

Sand-Lime Brick Production and Shipments

EIGHT active sand-lime block and brick plants reported for August and ten for July, statistics for which were published in August.

AVERAGE PRICE FOR AUGUST

	Plant Price	Delivered Price
Grand Rapids, Mich.	....	$14.00
Detroit, Mich.	....	17.00
Sebewaing, Mich.	$10.50	....
Saginaw, Mich.	11.00	....
Seattle, Wash.	16.00	18.00
Mishawaka, Ind.	12.00	13.75
St. Louis, Mo.	....	....
Watertown, Mass.	12.50	13.50

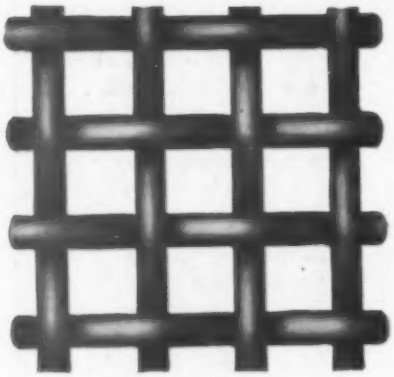
STATISTICS FOR JULY AND AUGUST

	*July	†August
Production	3,751,650	3,719,180
Shipments (rail)	100,000	91,000
Shipments (truck)	3,856,607	3,634,845
Stock on Hand	1,770,737	1,641,482
Unfilled Orders	2,140,000	2,000,000

*Ten plants reporting: incomplete, two not reporting stock on hand and three not reporting unfilled orders.

†Eight plants reporting: incomplete, two not reporting stock on hand and three not reporting unfilled orders.

ROEBLING
ABRASO
SCREEN
TRADE JERSEY



ROEBLING STEEL
Assures Long Life

Roebling "Abraso" Screening is made of special steel—manufactured by *custom methods* in Roebling's own mill. It is steel that offers maximum resistance to the BEATING of stone and gravel.

To further assure long screening life, Roebling controls every step of manufacture from steel making to fabrication.

Roebling "Abraso" Screening is available for every sizing, cleaning and grading service.

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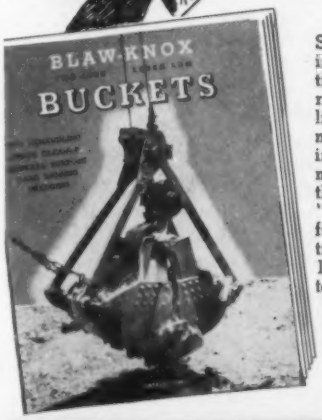
BLAW-KNOX BUCKETS have SEALED BALL BEARING SHEAVES



Sealed ball bearing sheaves in the lever arm reduce lost time and expense of bearing replacement, increase cable life and reduce friction, materially improving operating efficiency. This, and many other better features, that make BLAW-KNOX the "wise" buy in buckets are fully explained and illustrated in NEW CATALOG 1757. Send for your copy today.

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of Blaw-Knox Company
Farmers Bank Bldg.
Pittsburgh, Pa.

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BLAW-KNOX BINS AND BATCHERS • ROAD FORMS • STREET FORMS • CONCRETE SPREADERS • TAMPING ROLLERS • VIBRATORS
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NEW EQUIPMENT means
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Why cling to that old shovel? Why rob your profits to pay repair bills? The exclusive rolled alloy steel construction of P&H excavators means more dependability, greater production—and extra strength to resist the wear and tear of year-after-year operation.

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—by putting modern Davenports on the job. These easy handling, powerful locomotives do pleasing things to your books —when you figure out the relation between Output and Costs. For more than forty years we have been building fine locomotives. That's why—in dependability, low upkeep, and ability to get things done—Davenport Locomotives are your best buy.

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or
ELECTRIC
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DAVENPORT LOCOMOTIVE WORKS
A DIVISION OF DAVENPORT BESLER CORPORATION, DAVENPORT, IOWA

The above screening plant turns out 400 tons of graded aggregate per day and is kept supplied with raw material from a gravel bar by a ¾-cu. yd. Sauerman Slackline Cableway.

Increase PROFITS by moving your material the SAUERMAN way

This shows Sauerman Drag Scraper handling open storage of phosphate rock at large drying plant.

Where loose materials (such as sand, gravel, blasted rock or ore, etc.) must be dug, hauled, and dumped at ranges from 100 to 1500 ft., the economical way to do it is with a SAUERMAN Scraper or Cableway.

These efficient machines haul 10 to 1000 cubic yards per hour, require only one operator, and demand little in maintenance . . . have been reducing costs on hundreds of dig and haul jobs all over the world for 30 years.

Write for Catalog.

SAUERMAN BROS., Inc.
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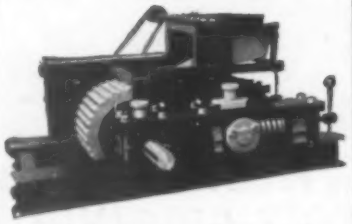
Sauerman LONG RANGE MACHINES

New Holland

SUPER ROLL CRUSHERS



New Holland Super Roll Crushers will reduce any rock material, etc., to required fineness at high rates of capacity. Output is doubled by patented pulsating feeder. Sizes for any production up to 100 tons per hour.

Write for bulletin

NEW HOLLAND MACHINE CO.

ESTABLISHED 1895

Jaw Crushers — Roll Crushers
Hammer Crushers — Cinder Crushers
Revolving Screens — Vibrating Screens
Elevators — Conveyors
Belting — Engines
Motors — Concrete Mixers
Special Equipment

NEW HOLLAND, PENNSYLVANIA
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HARDSOCG'S

DRILL FASTER *with* LESS AIR

New Type valve—lighter than other valves — operates the V-55 rock drill.

Drill has very strong rotation. Offset handle gives nice balance in operation.

Write for Complete Specifications and Details.

HARDSOCG Drill Company

Box 376 — Ottumwa, Iowa

Quarry Improvement

THE WHITESTONE Co., Tompkinsville, Ky., has finished remodeling its plant, and is now ready to start crushing on and delivery of agricultural limestone on the 1942 program.

Celebrate Safety Record

THE RIVER SAND Co., Steubenville, Ohio, recently celebrated a two-year accident-free safety record on the company's dredge boat on the Ohio river. The principal speaker was Captain Joseph Green, veteran riverman.

Buys Quarry

COLUMBIA QUARRY Co., St. Louis, Mo., has purchased a limestone quarry a half mile south of Elsberry, Mo., which had been operated by the Crystal Carbonate Lime Co. for 40 years. The plant was closed about a year ago. It is planned eventually to open the plant with complete equipment for crushing, grinding, and the preparation of agricultural limestone.

Plan Wallboard Factory

BLUE DIAMOND CORP., Los Angeles, Calif., has plans to build a wallboard plant at Arden, Nev. The cost of the plants and equipment would be about $400,000.

Big Cement Order for TVA

TWO TENNESSEE cement companies were awarded contracts for cement to supply TVA projects. The Signal Mountain Portland Cement Co., Chattanooga, received a contract amounting to $957,378 and the Volunteer Portland Cement Co., Knoxville, received an order for $922,797.

Ready Mix Expansion

THE W. G. BLOCK Co., Burlington, Iowa, has moved to a new location where a new ready mixed concrete batching plant will provide additional capacity to meet increased demands.

THE SOUTH SIDE READY-MIX Co., Omaha, Nebr., has built a new plant at 3604 L street. Edward Mees and D. K. Ellingwood are the owners.

Buy Portable Crushers

THE WEST VIRGINIA Highway department recently purchased two portable rock crushing plants from the General Crusher & Pulverizer Co.

Fire Damage

E. J. REYNOLDS SAND Co., Utica, Ill., reported a fire recently had partially damaged its "dry" plant. Damage to the building was estimated at approximately $10,000 by Charles Neisen, president of the American Silica Sand Co., Ottawa, Ill., which has been leasing the plant.

•

LEWIS ASPHALT ENGINEERING CORP., Clark, N. J., plant was largely destroyed by a fire which gutted six of the eight buildings with a loss estimated at $50,000.

•

BITUCOTE PRODUCTS Co., St. Louis, Mo., suffered damages of $2300 when a fire recently destroyed a warehouse building and its contents. The loss was covered by insurance.

•

SENECA MINERAL WOOL COMPANY'S plant at Tiffin, Ohio, was recently destroyed by fire.

Concrete Pavement Yardage

AWARDS of concrete pavement for August, 1941, have been announced by the Portland Cement Association as follows:

	Square Yards Awarded During August, 1941
Roads	3,910,028
Streets and Alleys	2,051,464
Airports	3,605,530
Total	9,567,022

THE ROSS FEEDER

Completely controls the flow of any size material from Storage Bins, Hoppers or Open-Dump Chutes to Crushers, Conveyors, Screens, etc.

High in efficiency. Low in maintenance and power consumption.

Furnished in sizes to suit your operation. Send full particulars for recommendation.

ROSS SCREEN & FEEDER CO.

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No Other Screening Medium Offers This
Variety of Perforations

Hendrick Perforated Metal Plate for vibrating and shaking screens is available in

—round, square, hexagonal, slotted, "Squaround or special openings.

—single corrugations or double corrugations; flat or rolled to any curvature.

—a variety of metals, particularly Hendrick High Carbon, Heat Treated Steel.

If you are not now using perforated plate on your vibrating screens, write for data.

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PLEASE CONSULT TELEPHONE DIRECTORY

Makers of Elevator Buckets of all types, Mitco Open Steel Flooring, Mitco Shur-Site Treads and Mitco Armorgrids. Light and Heavy Steel Plate Construction.

Keep your conveyor belts going with
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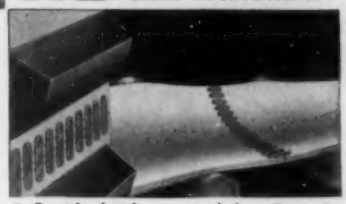
HD BELT FASTENERS

• **FLEXCO H D RIP PLATES** are used in repairing rips and patching conveyor belts. The wide space between outer bolts gives the fastener a long grip on the edges of the rip, while the center bolt prevents the fasteners from bulging.

• **FLEXCO H D BELT FASTENERS** make a strong, tight butt joint with long life. Recessed plates embed in belt, compress belt ends and prevent ply separation. Six sizes in steel and alloys.



• Avoid shutdowns and lengthen the life of your conveyor belts and bucket elevator belts by using Flexco HD belt fasteners and rip plates. Thousands of companies have stepped up the performance of conveyor lines and cut costs by using Flexco methods.

Bulletin F-100 shows exactly how to make tight butt joints in conveyor belts with Flexco HD Belt Fasteners. Also illustrates step by step the latest practice in repairing rips and putting in patches.

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FLEXCO HD BELT FASTENERS
Sold by supply houses everywhere

OSGOOD

TYPE 80 AIR CONTROL

The leader of them ALL for smooth, fast and efficient shovel, dragline or crane operation.

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ARE AMERICAN USERS

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On regular crushing jobs and for "specials" you can be sure of continuous production with low maintenance cost, high output and low power consumption.

Write for complete details.

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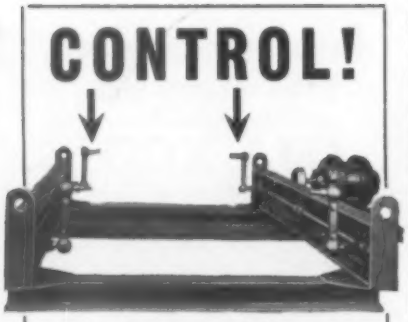

And Control Means Efficiency Always

This patented equalizer assembly connects the body to base frame and enables you to accurately CONTROL the circular throw of a SECO vibrating screen. You are always sure of getting maximum efficiency.

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Vibrating Screens

Screen Equipment Co.

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METAL SCREENS
ANY SIZE - ANY SHAPE
ANY METAL - ANY PERFORATION
H & K screens are produced to meet the most exacting specification and to serve well and long. Quality and workmanship are given first consideration.
Write for catalog
The Harrington & King Perforating Co.

5650 Fillmore St., Chicago—114 Liberty St., N. Y.

Traffic and Transportation

PROPOSED RATE CHANGES—The following are the latest proposed changes in freight rates up to and including the week of Sept. 20:

Southwestern

25503. Phosphate rock, Florida mines to points in Arkansas. To cancel commodity rates shown in Items 1570, 1580, 1590 and 1600, S. W. L. Tariff 45-W, permitting Class 12 rating to apply.

25588. Magnesium, sulphate of, crude, or **kieserite,** Brownfield and O'Donnell, Tex., to Port Rayon, Tenn. To establish on sulphate of magnesium, crude or kieserite, carloads, rate of 55c per 100 lb., min. 80,000 lb., from Brownfield and O'Donnell, Tex., to Port Rayon, Tenn.

25604. Barite ore, crude or ground and barite ore concentrates, Canon City, Colo., to Louisiana and Texas points. To establish a rate of $5.15 per ton of 2,000 lb. on barite ore, crude or ground, and barite ore concentrates, in sacks or in bulk, carloads, min. wt. marked capacity of the car used, from Canon City, Colo., to Lake Charles, Opelousas, New Orleans and Shreveport, La., and Dallas, Fort Worth, Galveston, Houston and Midland, Tex.

25612. Sand, gravel and related articles, between points in Louisiana and points in Arkansas, Oklahoma and Texas. To place Louisiana producers and shippers on a competitive basis with shippers in surrounding territories and to permit publication under the 13th Section Order in I. C. C. Docket 17000 Part 11, it is proposed to establish same basis for application between points in Louisiana west of the Mississippi River, on the one hand, and points in Arkansas, Oklahoma and Texas, on the other. It is proposed to establish a mileage scale of rates as outlined below:

10 miles and under		30	45
20 miles and over	10..	30	45
30 miles and over	20..	35	50
40 miles and over	30..	40	55
50 miles and over	40..	50	65
60 miles and over	50..	55	70
70 miles and over	60..	60	75
80 miles and over	70..	70	85
90 miles and over	80..	80	95
100 miles and over	90..	88	102
110 miles and over	100..	93	106
120 miles and over	110..	97	110
125 miles and over	120..	102	114
130 miles and over	125..	102	114
140 miles and over	130..	106	119
150 miles and over	140..	110	123
160 miles and over	150..	114	123
170 miles and over	160..	119	128
175 miles and over	170..	123	132
180 miles and over	175..	123	132
190 miles and over	180..	128	137
200 miles and over	190..	132	141
230 miles and over	200..	141	150
260 miles and over	230..	150	158
290 miles and over	260..	158	167
320 miles and over	290..	167	176
350 miles and over	320..	176	181
360 miles and over	350..	185	190
380 miles and over	360..	185	190
400 miles and over	380..	194	198
410 miles and over	400..	194	198
440 miles and over	410..	202	207
470 miles and over	440..	211	216
500 miles and over	470..	220	220
530 miles and over	500..	229	229
560 miles and over	530..	238	238
590 miles and over	560..	246	246
620 miles and over	590..	255	255
650 miles and over	620..	264	264
680 miles and over	650..	273	273
710 miles and over	680..	282	282
740 miles and over	710..	290	290
770 miles and over	740..	299	299
800 miles and over	770..	308	308
830 miles and over	800..	317	317
860 miles and over	830..	326	326
890 miles and over	860..	334	334
920 miles and over	890..	343	343
950 miles and over	920..	352	352
980 miles and over	950..	361	361
1000 miles and over	980..	366	366
1050 miles and over	1000..	374	374
1100 miles and over	1050..	383	383
1150 miles and over	1100..	392	392
1200 miles and over	1150..	401	401

25637. Limestone, Dolcito, Ala., to Lake Charles, La. To establish rate of 225c per ton of 2,000 lb. on limestone, crushed, having value for use in the production of magnesium, carloads, min. wt. marked capacity of car except when car is loaded to full visible capacity, actual weight will govern, from Dolcito, Ala., to Lake Charles, La.

25690. Feldspar, Horse Creek and Islay, Wyo., to Arkansas, Louisiana, Oklahoma and Texas. To establish rates on feldspar, from Horse Creek and Islay, Wyo., to destinations in Arkansas, Louisiana, Oklahoma and Texas, based 30c per ton of 2,000 lb. over rates presently in effect from Roberts Spur and Ft. Collins, Colo.

25703 (2). Phosphate rock, Florida mines, to points in Arkansas. To cancel commodity rates shown in Items 1510 to 1600, incl., S. W. L. Tariff 45-W, permitting Class 12 rating to apply.

Southern

26323-3 (carrier). Clay, kaolin or pyrophyllite, C. L. Establish rates from Sprucepine, N. C., and points taking same rates to points in Wis., the same as suggested under Subm. 26323 from Huber, Reids, Ga., etc.

26531 (shipper; suggested by carrier). Magnesite, C. L., min. 80,000 lb. Establish 83c cwt., Pacific Coast points and intermediate points to Florida Peninsula points taking Group K-1.

26528 (carrier). Mica, dry ground, and mica schist, dry ground, or **screened,** C. L. min. 60,000 lb. Establish 31c cwt., Johnson City, Tenn., and N. C. producing points on Clinchfield R. R., Huntdale, N. C., to Thermal City, N. C., incl., to Meridian, Miss.

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

Note 4—Reason: No present or prospective movement.

Note 5—Reason: Comparable with rates from other origins in immediate vicinity.

Note 6—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in box cars are to be assessed.

Note 7—The oil, tar or asphaltum not to exceed 10% of weight of the commodity shipped, the shipper to so certify on shipping order or bill of lading.

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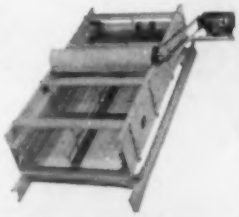

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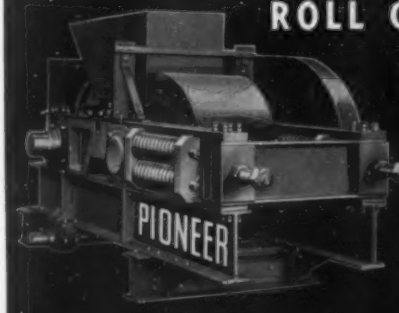

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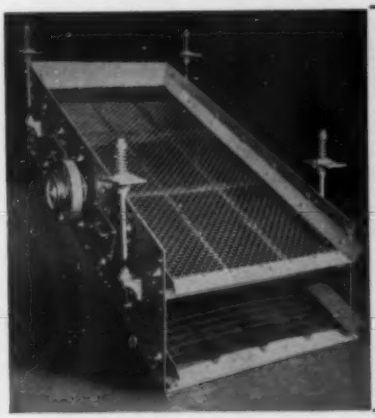

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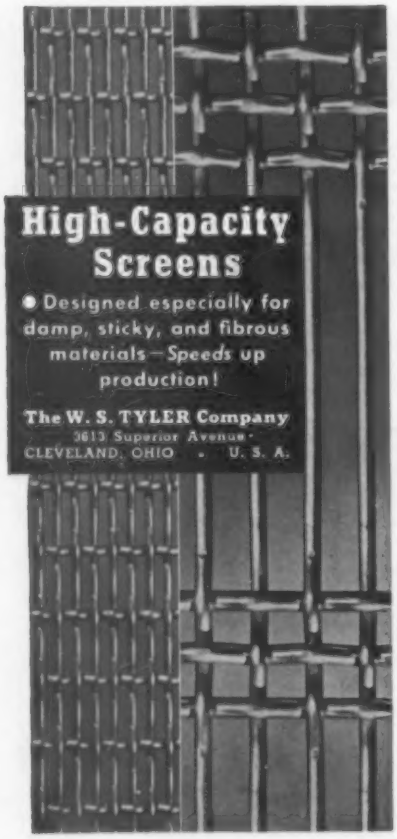
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26616 (shipper; suggested by carrier). **Magnesite**, C. L., min. 60,000 lb. Establish 95c net ton, Tampa and Port Tampa, Fla., to Waverly, Fla.

Trunk

Sup. 1 to 40132 (shippers). **Crude gypsum rock**, C. L., min. wt., 90 per cent of marked capacity of car but not less than 80,000 lb., from Akron, Oakfield, Clarence Centre, Wheatville, and Victor, N. Y., to Rockland, Me., $4.18 per net ton.

40176 (shippers). **Stone, crushed, grout and rip rap**, min. wt. 80,000 lb., from Hadley, N. Y., to various stations on C. R. R. of N. J., D. L. & W. R. R., L. V. R. R., N. Y. C. R. R., P. R. R., etc. Reason: (See Note 5).

40181. To cancel commodity rate of $2.97 per net ton on **sand and gravel** (other than industrial), in open cars, C. L.; and rate of $3.30 per net ton on **sand and gravel** (other than ground or pulverized), in closed cars or in open cars with tarpaulin or other protective covering, C. L., from New York and Brooklyn, N. Y., to Buffalo, N. Y., stations as published in CRRofNJ Tariff I. C. C. No. G-5315. Reason: (See Note 4).

40185 (shippers). **Limestone, ground or pulverized**, C. L., min. wt. 60,000 lb., from Erie R. R. stations East Buffalo, to Black Rock, N. Y., inclusive, to Beans and Prattsburgh, N. Y., $1.71 per net ton, in lieu of current commodity rate of $1.81 per net ton. Reason: Comparable with rates from and to other points.

40190 (shippers). **Stone, viz.: Limestone, fluxing**, C. L., min. wt. 40,000 lb., except to Ashland, Ky. (See Note 2), from Pounding Mill, Five Oaks, and Tazewell, Va., to Portsmouth, Hanging Rock, Ironton, New Boston, O., and Ashland, Ky., $1.44 per net ton in lieu of current commodity rate of $1.51 per net ton. Reason: (See Note 4).

40209 (carriers). To amend B. & O. R. R. Tariff I. C. C. No. 23090 by eliminating Baltimore Coal Pier, Baltimore, Md., as point where **cement, cinders, crushed stone, fuel pitch, gravel** and/or **sand**, C. L., may be handled from cars to vessels. Reason: Account not being used.

40211 (shippers). **Crude gypsum rock**, C. L., minimum weight 90 per cent of marked capacity of car, used, but not less than 80,000 lb., from Akron, Oakfield, Clarence Centre, Wheatville, Victor, Garbutt and Wheatland, N. Y., to Ironton, O., $3.19, and La Salle, Ill., $3.63 per net ton, in lieu of current class rates. Reason: Comparable with rates from and to other points.

Western

X-D-25-119. **Lime**, hydrated, quick or slaked, min. wt. 30,000 lb. and 50,000 lb., from Cordova, Ill., to Charlestown, Ind. Rates: Present—Combination basis. Proposed—20c per 100 lb., min. 30,000 lb.; 17c per 100 lb., min. 50,000 lb. (By shipper.)

E-151-30 and Sup. 1 (Appl. Bn. dated 4/17/41. **Feldspar, crude or ground**, from Laramie and Horse Creek, Wyo., to Chicago, Peoria, St. Paul and Miss. River groups, etc. Approved docketed proposal in principle by individual action.

E-155-15 (Appl. Bn. dated 5/22/41). **Fluorspar**, from Colorado and Wyoming origins to Birmingham, Ala., Ashland, Ky., Knoxville, Tenn., Atlanta, Ga., and Anniston, Ala. Approved docketed proposal.

E-155-19. **Fluorspar**, C. L., min. wt. 60,000 lb., from Colorado and Wyoming origins as provided in W. T. L. Tariff 134-L L. E. Kipp's I. C. C. A2194, also Northgate, Colo., to Hamilton, Ont. Rates: Present—Class or combination rates apply. Proposed—$11.22 per ton. (By shipper.)

Illinois

IRC 7056-4. **Silica (white sand), including ground silica**, straight or mixed carloads, from Ottawa, Ill., to St. Louis, Mo.-East St. Louis, Ill. Min. wt.: Present—90 per cent of marked capacity of car, except that when actual weight of shipment loaded to full visible capacity of car is less than 90 per cent of marked capacity, actual weight will be the min. wt., but in no case shall the min. wt. be less than 40,000 lb. Proposed—90 per cent of marked capacity of car, except that when actual weight of shipment loaded to full visible capacity of car is less than 90 per cent of marked capacity of car, actual weight will be the min. wt. but in no case shall the min. wt. be less than 60,000 lb.

IRC 7497-29A. **Limestone, crushed or ground**, C. L. (See Note 2), from Quincy, Ill., to Burlington, Wis. Present—$2.35 net ton. Proposed—$2.20 net ton. Meeting Sept. 9, 1941, 10 a. m. (Chicago Time).

IRC 9339. **Sand, molding**, C. L., Savanna, Ill., to Litchfield, East St. Louis, Ill., and St. Louis, Mo. Present—Class. Proposed—$1.53 net ton. Meeting Sept. 9, 1941, 10 a. m. (Chicago time).

IRC 9340. **Limestone, crushed or ground**, min. wt. as per Item 2620, W. T. L. 1-Y, I. C. C. A-3185, from East St. Louis, Ill., to points in Wisconsin and Minnesota:

To (representative)	Pres.	Prop.
Cameron, Wis.	17	13
Cedarhurst, Wis.	15	11
Lemington, Wis.	21	17
Duluth, Minn.	21	18

Central

67961. **Sand** (other than industrial), in open top cars, without tarpaulin or other protective covering, C. L., (See Note 3), provided that orders will not be accepted for open-top cars of less marked capacity than 80,000 lb., and provided further that when a shipper orders a car of this capacity or greater, and the carrier is unable to furnish car ordered and furnishes a car of greater capacity than ordered, the min. wt. for the car furnished shall be that which would have been obtained had the car ordered been furnished and used. Establish on—

Proposed Rates (in cents per net ton)

	From		
To	West Elizabeth, Penn.	Eliza- Penn.	Courtney, Penn.
Braddock, Penn.	66		66
Verona, Penn.	77		77
Brackenridge, Penn.	77		88
Latrobe, Penn.	88		88
Midland, Penn.	99		99
Weirton, W. Va.	99		99
Neville Island, Penn.	99		99
Monessen, Penn.	110		110
Johnstown, Penn.	99		110
Steubenville, O.	105		105
Aliquippa, Penn.	110		110
Monaca, Penn.	110		110

67981. **Limestone, ground or pulverized**, unburnt, C. L., min. wt. 60,000 lb. Establish on, from Hannibal Mo., Quincy and Marblehead, Ill., to Albany, N. Y, 578c; Bridgeport, Conn., 660c; Boston, Mass., 704c; Brooklyn, N. Y., 600c; Everett, Mass., 704c; Glendale, N. Y., 600c; Malden, Mass., 704c; Troy, N. Y., 578c; Valhall, N. Y., 622c; Jersey City, N. J., 600c; Phillipsburg, Penn., 567c and Danvers, Mass., 704c per net ton.

67983. **Slag, crushed or crushed commercial** (not granulated), in open top cars, C. L. Establish on, from Hamilton, O., to Charlestown, Ind., 127c per net ton, via B. & O. R. R. direct.

67984. **Slag, crushed or crushed commercial** (not granulated), in open top cars, C. L. (See Note 3). Establish on, from Hamilton, O., to Robinson, Ill., 171c per net ton, via B. & O. R. R.-Indianapolis, Ind.-N. Y. C. R. R. (C).

67986. **Slag, crushed or crushed commercial** (other than granulated), in open top cars, C. L. (See Note 3). Establish on, from Hamilton, O., to Covington, O., 105c per net ton, via B. & O. R. R., Piqua, O., thence P. R. R.

68006. **Slag, C. L.** Establish switching rate of $8.91 per ton on, from plant of the Buffalo Slag Co. to plant of the Great Lakes Portland Cement Co. at Buffalo, N. Y., via P. R. R.

68013. **Industrial sand,** per usual descriptions (a), (b) and (c). Amend agency and individual lines' tariffs, publishing rates on, from points in C. F. A. territory to interstate destinations, by providing for the addition thereto of "Slocums, O." as an origin point in the Coalton (No. 14) group.

68016. **Sand** (except industrial) **and gravel,** in open top cars, C. L. (See Note 3). Establish on, from LaFayette, Ind., to Catlin, Fairmount, Homer and Sidney, Ill., †*61c; *88c per net ton.

* No switching to be absorbed.

† Rate to expire with June 20, 1942, unless sooner canceled, changed or extended.

§ Rate not to apply during effectiveness of rate referenced "†."

68017. **Stone, crushed** (in bulk) **and crushed stone screenings** (in bulk) in open top cars, also **limestone, agricultural** (not ground or pulverized), in open top cars in bulk only, C. L. (See Note 3). Establish on, from Carey, O., to Broadacre, O., 149c per net ton, via C. & O. Ry., Columbus, O., P. R. R. and via C. & O. Ry., Upper Sandusky, O., P. R. R.

68104, TLA RP 40134. **Gravel, sand, slag and crushed stone,** coated with oil, tar or asphaltum, in bulk in open top equipment in straight carloads. See Notes 3 and 5). Establish on, from Clarksburg, W. Va., to stations on the B. & O. R. R. in the states of Md., Pa. and W. Va. taking Index Nos. 1860 to 2340, 2480 to 5855 and 6592 to 8710, per Agent Leland's List of Open and Prepay stations:

20 miles and under	80
40 miles and over 20 miles	91
60 miles and over 40 miles	102
80 miles and over 60 miles	113
100 miles and over 80 miles	124
125 miles and over 100 miles	135
150 miles and over 125 miles	146
175 miles and over 150 miles	157
200 miles and over 175 miles	168
225 miles and over 200 miles	177
250 miles and over 225 miles	185

68107. **Cement, common, hydraulic, masonry mortar, natural or portland,** C. L., min. wt. 50,000 lb. Establish rate of 29c cwt. from Speeds, Ind., to Hopewell, Va.

68115 (Sup. 1 to W. D. A.). **Sand, all kinds, or gravel,** in open top cars, C. L. W. D. A. 68115, D. B. 3094, dated Aug. 21, 1941, covering proposal to establish rates on, is hereby amended to show proposed rate from Geauge Lake to Phalanx, O., as 55c in lieu of 66c per net ton.

68144. **Lime, agricultural, common, fluxing, hydrated, quick or slaked.** Cancel rates on, from Cold Springs, O., Edwardsville, Ill., and Indianapolis, Ind., to various destinations in C. F. A. territory as published in N. Y. C. (C) Trfs. 1535-P, I. C. C. 8721; 1913-B, Ohio 2855; 1923, Ohio 2666, account obsolete. Classification basis to apply.

68153. **Stone, fluxing, furnace or foundry, malting or refractory,** unburnt, in bulk in open-top cars, C. L. (See Note 3). Establish rate of 124c per G. T. from Genoa, O., to Midland, Penn.

68169. **Limestone, agricultural,** unburnt (not ground or pulverized), in bulk in open top cars, C. L. Establish on from Nario, O., to Mahoning, O., 138c; Mantua, O., 127c; Waco, O., 127c; Fernwood, O., 149c; Unionport, O., 149c per net ton.

68225. **Stone, fluxing, furnace or foundry,** melting or refractory (unburned), in bulk in open top cars, C. L. Establish on, from Annandale, Penn., district to Mingo Jct., O., 103; Worthington, Penn., to Mingo Jct., O., 103; Worthington, Penn., to Youngstown, O., 88c per gross ton.

68243. **Sand (all kinds) and gravel,** in open top cars, C. L. Establish on, from Cleveland, O., to Whittlesey, O., 88c net ton, via B. & O. R. R., Medina, O., Nor. Ohio Ry.

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Greater Operating Economy

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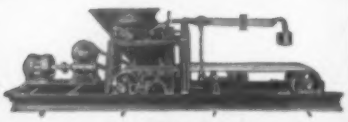

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OBITUARIES

EZEKIEL J. JONES, foreman at the Palmetto Quarries Co., Columbia, S. C., died from a fall at the plant. He was 45 years of age and had been with the Palmetto quarry for 15 years.

•

Peter J. Holtz, superintendent of the Ohio Western Lime Co., from 1909 to 1923, was killed as a result of a fall. This plant later became part of the Kelley Island Lime & Transport Co.

•

Wilbert Wallen, superintendent of the George Pettinos Sand Co., Millville, N. J., died suddenly of a heart attack.

•

FRANK KEENER, aged 70, died recently after a brief illness. He at one time was manager of the Western Indiana Gravel Co., Lafayette, Ind.

•

JOHN M. JONES, who had been active in quarry work for almost 40 years, passed away recently at the age of 73. Many years ago he became active in the operation of the old Universal and later the Wisconsin Granite Co., quarries in Berlin, Wisconsin.

•

EDWIN NEARY, president-manager of the Lakeside Gravel Co., Seattle, Wash., died of a heart attack September 9 at the age of 50. Mr. Neary was the son of the late Philip Neary, a pioneer in the sand and gravel business in Seattle. He attended the old South School and served two years overseas during the World War.

•

WATSON FORESMAN UPDEGRAFF, former sales manager of the Green Bag Cement Co. of West Virginia, Kenova, W. Va., died recently at the age of 72. Mr. Updegraff also had been general sales manager of the General Chemical Co., Pittsburgh, Penn.

•

CHARLES L. HOGAN, president and general manager of the Lone Star Cement Corp., New York, N. Y., passed away Sept. 5 at the age of 60. Mr. Hogan was for many years a leader in the Portland cement industry and had been president of the Lone Star concern since November, 1933. He joined the company in 1921 as manager of the Cuban Portland Cement Co. at Havana, a Lone Star subsidiary. Mr. Hogan had been a commercial agent with the Chicago, Great Western Railroad before 1910; when he became traffic manager of the Lumberman's Portland Cement Co., of which he later was secretary and sales manager. From 1914 to 1921 he was president and manager of the Altoona Cement Co. at Altoona, Kan. He was also a director of the Portland Cement Association and of the Manufacturers Trust Co. of New York.

•

OWEN P. THOMAS, president of the Mettowee Valley Slate Co., Granville, N. Y., passed away recently at the age of 58. Mr. Thomas was born in Wales, England, and came to this country as a dock superintendent for the Cunard Line before he entered the slate quarrying business.

•

LUCIUS GARLAND EVERIST, founder of L. G. Everist, Inc., Sioux City, Iowa, died recently at the age of 88. Mr. Everist was long identified with the ready mixed concrete and building materials business in Sioux City.

•

WILLIAM HOGG, superintendent of the Hely Rock Crusher Co., Cape Girardeau, Mo., until he retired in 1934, died recently after a brief illness. He was 74 years old.

•

COL. HORATIO B. HACKETT, World war hero, architect and noted figure in the sports world, died Sept. 8 in Chicago at the age of 61. His war activities won him the Distinguished Service medal and the Silver Star and Purple Heart decorations. At the time of his death, Col. Hackett was head of the Materials Service Corp. of Chicago.

•

CHARLES H. ROBERTS, treasurer of Johns-Manville Corp., New York, N. Y., died Sept. 10 after a brief illness. Mr. Roberts was 51 years old and lived in Scarsdale, N. Y. He was born on a farm near Doylestown in Bucks county, Penna., on May 8, 1890. In 1907 he began his career with J. A. Roeblings Sons Co., as head of their cost department. Mr. Roberts joined Johns-Manville in 1928 as assistant general auditor. In that same year he was made general auditor. In 1937 he became comptroller and the following year was appointed treasurer.

•

AMOS H. POTTS, district manager of the Portland Cement Association at Los Angeles for 15 years, and prominent in the construction industry of southern California, died recently after a brief illness.

"PENNSYLVANIA" REVERSIBLE HAMMERMILL

boosting the efficiency of the secondary reduction at a western Cement Plant, by Major Impact Crushing,— Automatic Hammer Turning, — and Sharply Reduced Upkeep Costs.

A REVERSIBLE Hammermill may afford just the increased output and efficient uninterrupted production which you now need to keep pace with demand upsurge.

"PENNSYLVANIA" Engineers are at your service.

PENNSYLVANIA CRUSHER COMPANY

Liberty Trust Building
Philadelphia

RYERSON CERTIFIED STEELS

10 Strategically-Located Steel-Service Plants

Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structurals, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes, Mechanical Tubing, Rivets, Bolts, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

HAYWARD BUCKETS

USE RIGHT BUCKET FOR THE JOB

Hayward makes all four—clam shell, drag-line, electric motor, orange peel. A Hayward recommendation is unprejudiced.

THE HAYWARD COMPANY
202-204 Fulton Street
New York, N. Y.

SAVE STEEL FOR NATIONAL DEFENSE

WELD Jaw Plates, Gyratory and Roll Crushers, Shovel Teeth, Hammers, Tractor Tread Grousers

with

MANGANAL

Reg U. S. Pat. Office. U. S. Patents 1,876,738—1,947,167—2,021,945

11 to 13½% Manganese Nickel Steel

WELDING ELECTRODES, WEDGE and APPLICATOR BARS, HOT ROLLED PLATES

STULZ - SICKLES CO. *Sole Producers* 134-142 Lafayette St., Newark, N. J.

Sold Thru Distributors Only

WILFLEY centrifugal SAND PUMPS

for Slurries, Sand Tailings, Slimes, Acid Sludges

Save Pumping Costs

Continuous operation without attention for long periods. Stuffing box, stuffing, gland water ALL eliminated. Close clearances maintained by easy slippage seal adjustment. Heavy pumping parts of material best suited for YOUR particular problem. Complete engineering service. Prompt shipment of parts. The most efficient and economical pump you can buy. *Write for Complete Catalog*

A. R. WILFLEY & SONS, Inc., Denver, Colo., U. S. A.

NEW YORK OFFICE: 1775 BROADWAY

PERFORATED METAL SAND AND GRAVEL SCREENS

Manufactured exactly to your specifications

Any size or style screen, in thickness of steel wanted with any size perforation desired.

We can promptly duplicate your present screens at lowest prices

CHICAGO PERFORATING CO.
2437 West 24th Place
CHICAGO, ILLINOIS
Canal 1459

McLANAHAN EQUIPMENT for ROCK— SAND—GRAVEL

Single and double roll and jaw crushers, hammer mills, super dry pans, steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists. Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.

McLanahan & Stone Corporation
Established 1835
Hollidaysburg, Pennsylvania

MARMON-HERRINGTON

All-Wheel-Drives "Have What It Takes" in Pits and Quarries . . .

It takes traction to haul heavy loads through loose rubble and up steep grades. Marmon-Herrington All-Wheel-Drive converted Fords are unbeatable in this difficult service, offering unrivaled performance, and dependability at most reasonable cost. Write for literature.

MARMON-HERRINGTON CO., INC.
INDIANAPOLIS, INDIANA, U. S. A.

"Established in 1885"

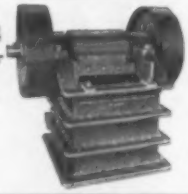
For LOW COST LARGE PRODUCTION GRUENDLER EQUIPMENT

FREE—Write for Catalog and Specifications

JAW CRUSHERS

Bronze or Roller Bearing

Heavy armor plate steel or cast steel.
Heavy Duty Construction
Large capacity
Small power Requirements



For Secondary Crushing
DOUBLE ROLL CRUSHERS
From 18" to 40" Diameter

LIMESTONE PULVERIZERS

Stationary or Portable

Crushes Large Stone to 2" minus Down to Agricultural Dust

Adjustable (8 Sizes)

Cross Section View of Pulverizer

GRUENDLER

CRUSHER • PULVERIZER • GRINDER

GRUENDLER CRUSHER & PULVERIZER CO.
2920-26 N Market St., St. Louis, Mo.

FARREL BACON CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service

EARLE C. BACON, Inc.

17 John St., New York, N. Y.

Manufacturers' News Notes

Simplicity Engineering Co., Durand, Mich., has appointed J. B. Gower as their direct factory sales representative for eastern Ohio and western Pennsylvania.

The Wickwire Spencer Steel Co. and its subsidiary the American Wire Fabrics Corp., New York, N. Y., has announced the appointment of George L. Randall as advertising manager.

Chain Belt Co., Milwaukee, Wis., has announced the appointment of G. K. Viall, vice-president, as head of a new Division of Research and Development now being organized. Mr. Viall has been connected with Chain Belt Company since 1921 in various capacities, including chief engineer Chain Division, assistant to the president and works manager. In assuming his new position, he will also retain his position as vice-president in charge of the Construction Machinery Division.

B. F. Devine

B. F. Devine, who joined the Chain Belt organization in 1909, has been promoted from sales manager of the Construction Machinery Division to the position of Manager of the Construction Machinery Division. Mr. Devine has served in the Purchasing Department, the Engineering Sales Department and later as assistant sales manager of the Construction Machinery Division. In his new position he also will supervise the management of sales of this Division.

Logan Engineering Co., Chicago, Ill., has announced the appointment of Oscar E. Hesse as secretary-treasurer.

Hercules Powder Co., Wilmington, Del., has appointed L. W. Mason as comptroller, succeeding F. J. Kennerley who will devote his full time to the office of assistant treasurer. W. S. Harkins will be assistant to the comptroller.

Gar Wood Industries, Inc., Road Machinery Division, Detroit, Mich., has announced that A. C. Berg has been placed in charge of manufacturing for that division. Mr. Berg has been in the employ of Gar Wood Industries, Inc., since 1919.

Equipment Corporation of America, largest dealer in rebuilt machinery, with offices and rebuilding plants in Chicago, Pittsburgh and Philadelphia, has opened a New York office to handle machinery purchases, as well as selling and renting, to meet the demands arising from the National Emergency. John A. Conboy will be in charge of all activities. M. E. Jost will continue to maintain the general Eastern headquarters at Philadelphia. C. T. Beebe will become Mr. Jost's assistant.

Fairbanks, Morse & Co., Chicago, Ill., announces the death of John Morse, son of Col. Robert H. Morse, president, due to an automobile accident in San Francisco, Calif. The younger Morse was 25 years of age and had been assistant manager of the company's San Francisco Branch.

Farrel-Birmingham Co., Inc., Ansonia, Conn., has announced the retirement of Lawrence K. Blackman, assistant treasurer, Buffalo, N. Y., after 43 years of continuous service with the company. Mr. Blackman entered the employ of Farrel-Birmingham Co. (then Farrel Foundry & Machine Co.) in 1898 as a bookkeeper at its Ansonia office, where he served for 21 years. In 1920 he was transferred to Buffalo, N. Y., in charge of general accounting, and in 1930 was elected to the position of assistant treasurer, which post he held until his retirement.

Pioneer Engineering Works, Minneapolis, Minn., has announced that James Ray Norton has been appointed their New York representative with offices at 11 E. 42nd Street. Mr. Norton was formerly the New York City representative of Smith Engineering Works, Milwaukee, Wis.

Food Machinery Corporation, Peerless Pump Division, Massillon, Ohio, has announced removal of its Eastern offices and manufacturing facilities to a new and modern plant located at 1250 Camden Avenue, S. W., Canton, Ohio, under the same general management as the Los Angeles plant. Vernon Edler is vice-president and general manager.

Wheelco Instruments Co., Chicago, due to the tremendous increase in business volume, has moved to its own building located at Harrison and Peoria Streets, Chicago, and expect to double their personnel in both the factory and offices. This is the third major expansion of this company since 1935.

Bailey Meter Co., Cleveland, Ohio, announces the opening of a Detroit branch office, located in Room 226, Curtis building, under the management of N. M. Barnett, who is ably assisted by R. F. Hanson and R. T. Cowan. Each of these engineers has had wide experience in the problems of power plant operation and is thoroughly familiar with specific operating conditions as they prevail in the Detroit area. The company also announces enlargement of the field engineering staff. The following engineers have been assigned to field duty: L. L. Melick to New York; J. F. Triolo to Philadelphia; G. M. Wallace to San Francisco; B. F. Elias to Cincinnati; D. E. Smith to Buffalo.

New Incorporations

South Carolina Granite Co., Blairs, S. C., has been granted a charter to mine and deal in raw and crushed stone; buy and sell machinery to furnish crushed and uncrushed stone to contractors, governments and businesses. Capital stock is listed at $100,000. Incorporators are D. E. Saunders, president; J. M. Hemphill, vice-president; and A. M. Whitner, secretary and treasurer.

East Montpelier Sand & Gravel Co., Barre, Vt., has filed articles of association to deal in sand and gravel and to manufacture all types of concrete products. Authorized capital is $10,000, consisting of 100 shares at $100 a share. Incorporators are Benjamin O. Simeone of Medford, Mass., Salvitore Caselliini and T. T. Lawson, both of Barre, Vt.

Portable Concrete Block Mfg. Co., Portageville, Mo., has been organized to manufacture concrete corner pilasters, coping and regular blocks after a new and improved pattern and formula. Incorporators are J. O. Fenimore, president; J. E. Fenimore, vice-president; S. S. Fenimore and B. J. Fenimore, construction supervisors; Paul Combs, sales manager; Pauline Cummings, secretary-treasurer, and R. J. Kiley, attorney.

Calloway Lime Co-operative, Murray, Ky., has been organized with seven incorporators headed by B. W. Edmonds. Non-stock.

Atlas Fluorspar Co., Elizabethtown, Ill., has been incorporated to handle fluorspar and other minerals, with a capital of 60 shares, no par value. Incorporators are James R. Ginn, Oscar P. Grischy and Elmer W. Grischy. Grischy & Grischy, 2405 Union Central Bldg., Cincinnati, Ohio, are the agents.

Tallahassee Sand Co., Tallahassee, Fla., has been granted a charter to deal in sand, with a capital stock of 50 shares, no par value. Incorporators are A. E. Maige, O. J. Nettles, and H. L. Roberts, directors.

A BIG *full* LOAD WITH EACH BITE

Because of their design and construction, Industrial Brownhoist clamshell buckets take extremely full loads with each bite, practically eliminate the need for hand shoveling, speed up material handling and cut handling costs. Quantity production plus our manufacturer-direct-to-you policy reduces your bucket investment. Write today.

INDUSTRIAL BROWNHOIST BUCKETS

INDUSTRIAL BROWNHOIST CORP., BAY CITY, MICHIGAN • DISTRICT OFFICES: NEW YORK, PHILADELPHIA, PITTSBURGH, CLEVELAND, CHICAGO

Classified Advertisements

POSITIONS WANTED — POSITIONS VACANT Set in six-point type. Minimum $1.00 each insertion, payable in advance.

INFORMATION—Box numbers in care of our office. An advertising inch is measured vertically in one column. Three columns, 30 inches to the page.

CLASSIFIED—Displayed or undisplayed. Rate per column inch, $5.00. Unless on contract basis, advertisements must be paid for in advance of insertion.

IMMEDIATE SHIPMENT IS IMPORTANT TODAY

READY—No Waiting for Delivery with CONSOLIDATED Used Machinery

OLIVER FILTERS

3—Oliver Rotary Continuous Filters, 8'x10', wood stave, closed steel head, steel trough, oscillating agitator, reduction gear drive, no motor, complete with receivers, pumps.

GYRATORY CRUSHERS

1—16" Telsmith No. 7.
1—30" Superior McCully.
1—20" Superior McCully.

GYRATORY REDUCTION CRUSHERS

1—1'8" Traylor TY.
1—410-TZ, capacity 150 t.p.h. through 1¼" square mesh; 10" feed opening.
1—Kennedy No. 25 with motor in pulley.
1—Kennedy No. 49 with motor in pulley.
1—Kennedy No. 19, V-belt drive.

JAW CRUSHERS

66x86 Traylor; 36x24 Farrel; 24x36 Allis-Chalmers; 8x36 Universal Roll Jaw; 18x30 Allis-Chalmers and smaller sizes.

HAMMER MILLS

32"x15" Penna. SX-2, 4x1" hammers, adj. grate.
36"x24" Gruendler No. 4XA, 66—3"x1" hammers.
24" Mikro Pulverizer No. 4-TH, stirrup hammers.
No. 5 Williams Roller Knife Shredder, 40"x30".
No. 4 and No. 6 Williams "Jumbo".
20" dia. x 24" Dixie, direct conn. 40 H.P. A.C. motor.
24"x20" Jeffrey Type B-2 Shredder.
30"x24" Stedman, Model "A"
No. 3 and No. 5 Jay Bee Mills.

2—6'x12' ROD MILLS

Hardinge straight side Rod Mills, iron lined, herringbone steel gears, enclosed gear drive units, charge of rods with each mill. Arranged for peripheral or trunnion discharge. In excellent condition and for immediate shipment.

ROTARY DRYERS, DIRECT HEAT

Ruggles-Coles, double shell: 5'x26', 5'x30', 6'x35', 5'6"x60', 80"x45'.
Single Shell: 4'x30', 5'x30', 6x40, 6x50, 6x60, 7'x60', 8x60

ROTARY KILNS

6'60', 8'x110'.

DIESEL GENERATING SETS

1—560 H.P. F-M, Model 33, Style M, 257 RPM, 4-cyl., 16"x20", with magnetic clutch and pulley take-off. Used two years.
2—1200 H.P. McIntosh & Seymour, Type 8-B-40, 8-cyl., 20"x24", 250 RPM. For sale with or without direct connected 800 KW Westinghouse d.c. generator. We have just sold two of these sets.

VIBRATING SCREENS

2—4'x7' Leahy, 2 deck, motor driven.
8—3'x5' Tyler Hummer, 2 deck, No. 31, enclosed.
2—4'x7' Jeffrey-Traylor, Type FB-4, 2 deck.
2—3'x7' Simplicity, 2 deck, motor driven.
2—3'x8', 3'x10' Niagara, 2 deck.
1—4'x8' Huron, 1 deck, V-belt drive.

LIME HYDRATORS

Weber 8r type, made by Arnold & Weigel with No. 1 Raymond Bros. Lime Separator; also Kritzer.
One complete Hydrated Lime Plant.

CENTRIFUGAL AIR SEPARATORS

10' Sturtevant; 8', 10', 12', 14' Gayco; 6' Raymond; also 5' dia. Raymond "Whizzer" for attachment to roller mill. 5' Gayco.

BALL, ROD AND TUBE MILLS

Ball Mills: 6x6, 6x8.
Rod Mills: 4'x8', 6x12 Hardinge, straight side.
Tube Mills: 2—5'x20' Bonnot Co., silex lined.
1—5'x22' Bonnot Co., silex lined.
6'x23', 2—6'6x20' Smidth, silex lined.
5'x22' Allis-Chalmers, 5'x35' Vulcan, both iron lined.

RAYMOND PULVERIZERS

2—4 roll High Side, located Toledo.
Nos. 0050, 00, 1 and 3, Bentor type—also Nos. 55, 60, 90 Imp type.

CONSOLIDATED PRODUCTS CO., INC.

15-16-17 PARK ROW — *Our Shops at Newark, N. J., cover eight acres.* — **NEW YORK, N. Y.**

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C., for sale at attractive prices. New and Rebuilt. All fully guaranteed. Write for List and Prices.

V. M. NUSSBAUM & CO.
Fort Wayne, Indiana

FOR SALE

Clamshell Buckets—Blaw Knox—½, ⅝, ¾ and 1 yd.
Dragline buckets—Page 1¼ and 2 yds.
Shovel dipper—1 yd. full manganese.
Locomotive Crane—Browning No. 5, 25-ton, steam, eight wheel, 50 ft. boom.
Marion Mod. 36, combination, 1¼ yd., shovel crane and dragline.

P. A. HENAULT
2140 Book Bldg. Detroit, Mich.

Monighan Diesel Walker Draglines—2W to 6W.
Kiln-Dryer, 8'x80', 42" tube. Wt. 135 tons.
Link-Belt K-55 Shovels, Cranes, Drags., & K-480.
Shovel—¾ yd. Gas Cat. Good shape. $2,500.
Shovel Fronts—L-B 2 yd., P&H ⅝ yd., etc.
Locomotive Cranes—Steam 7½ to 30 tons; Gas 10 to 30 tons; Electric 10 to 25 tons.
Page ⅝ yd. bucket, $175. L-B K-44 fairleads.
Bessemer 50 HP slow speed Full Diesel engine.
Barber-Greene Gas Cat. Loader. Overhauled.
JAMES WOOD, 53 W. Jackson Blvd., Chicago, Ill.

¼, 1, 1¼ yd. Owen & Williams Buckets
30, 35 HP Gas Hoists
50, 60, 100 HP Elec. Hoists
1¼ Nwest Shovel Attachment
1¼ B-Erie 41B Shovel Attachment
1 yd. Page Dragline Bucket
½, ¾, 1¼ Gas Crawler Cranes

J. T. WALSH
Brisbane Bldg. Buffalo, N. Y.

22 x 30—54" "Ocala" McLanahan, 36 x 60" Fairmont Sgl Roll Crushers.
30 x 30", 36 x 16" Traylor, 54 x 24" Allis C Dbl Roll Crushers, 2' Symons Cone Crusher, Fine.
8 x 36", 15 x 36" Universal, 10 x 42" Acme, 10 x 30" Champion R. B Jaw Crushers.
No. 9, 10 McCully, No. 19, 25-S, 37 Kennedy, No. 8 Gates, Gyratory Crushers.
Barber Greene Loaders, No. 24, 25, 82-A.
Shovels, Cranes, Screens, Conveyors, Elevators.
100 HP Fairbanks Morse Diesel, Complete $1250.
What Do You Need? Ask for Bulletins 54 & 55.

MID-CONTINENT EQUIPMENT CO.
710 Eastgate Pa. 2290 St. Louis, Mo.

NEED DUMP CARS? Immediate Delivery

3, 30-yd. Clark, d/t doors	7, 20-yd. Western
8, 24-yd. Koppel	24, 16-yd. Western
15, 20-yd. Koppel	15, 16-yd. Kilbourne & Jacobs

Illustrated specifications available
OTHER TYPES OF CARS TOO
Also Locomotives, Cranes, Shovels, Etc.

IRON & STEEL PRODUCTS, Inc.
13402 S. Brainard Ave., Chicago, Illinois
"ANYTHING containing IRON or STEEL"

HYDRATORS
3 Kritzer & Schultless Hydrators.
AIR COMPRESSORS
BELTED: 355, 528, 676, 1000, 1300 & 1570 Ft.
ELECTRIC: 478, 676, 807, 1302, 1722 & 2200 Ft.
DIESEL: 605, 807 & 1000 Ft.
PORTABLE GAS: 110, 160, 220, 310, 540 & 1300 Ft.
STEAM: 49, 210, 528, 1300, 2200 & 3600 Ft.
CLAMSHELL BUCKETS, SKIPS & GRAPPLES
Owen B A & H Stone Grapples.
2 Yd. OWEN Type S Material Handling.
1⅛ Yd., 1 Yd. & ¾ Yd. HAYWARD Class E.
18 Steel Skips 6½ x 6 x 2½.
5 Ton Bucyrus Rock Grabs.
CRANES AND DRAGLINES
¾ Yd. 5 Ton O & S 30 Ft. Boom.
12 Ton NORTHWEST 50 Ft. Boom Gas.
20 Ton LIMA, 750 Diesel, 65 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Lore
25 Ton LINK BELT K-48 Electric. 70 Ft. Boom.
CATERPILLAR SHOVELS
¾ Yd. Lima Diesel.
2 Yd. Marion Steam Shovel.
¾ Yd., 1¼ Yd., 2 Yd. & 4 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas.
1½ Yd. LIMA Diesel.
1¼ Yd. BUCYRUS 41B Steamer.
4 Yd. Bucyrus 120B Electric. Also 3 yd. Erie Elec.
DUMP CARS
46—KOPPEL 1½ Yd. 24 & 30 In. Ga., V Shaped.
15—2 Yd., 3 Yd., 4 Yd., 6 Yd., 12 Yd., 36 In. Ga.
20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.
15—Std. Ga. 50 Ton Battleship Gondolas.
FLAT CARS
9—50 ton std. ga. heavy duty flat cars.
HOISTING ENGINES
Gas: 15, 30, 60, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
Steam: 6¼x8, 7x10, 8¼x10, 10x12, 12x14.
DIESEL UNITS
75, 90, 180, 200 HP F. M. Engines.
110 HP Ingersoll Rand Engine.
175 KVA Worthington 3/60/2300.
275 KVA Fairbanks 3/60/2300.
BALL, ROD AND TUBE MILLS
6x8 Pebble Mill & 5x5 Batch Mill.
5'x22" HARDINGE CON. Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x8, 8x6 & 10x9 Straight Ball Mills.
4x16, 5x18 & 5x22 Tube Mills & 6'x22'.
3½ x 8 & 5x7 Air Swept Tube Mills.
2x4½, 6x12 & 5x12 ROD MILLS.
PULVERIZERS
JEFFERY 24x20 & No. 1 Sturtevant Ring Roll.
RAYMOND Auto Pulverizer No. 0000, 0 & 3.
RAYMOND Imp. Mills, No. 4, 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 ft. Chaser M.
STEEL STORAGE TANKS
10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.
MATERIAL BIN
116 Ton Blaw Knox 2 Compt.
400 BARREL CEMENT BIN
400 Barrel Butler Portable Steel Cement Bin with Fuller automatic batcher, push button control.
SEPARATORS AND COLLECTORS
8, 10 and 14 ft. Separators, Gayco & Bradley.
ROLL CRUSHERS
30x60 Fairmount & 36x20 Diamond.
JAW CRUSHERS
10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 26x12, 30x15, 30x13, 36x15, 36x30, 36x18, 36x14, 36x9, 36x6, 36x10, 36x24, 42x9, 48x42, 48x36, 60x42, 84x66, 36x16, 9x36.
CONE & GYRATORY CRUSHERS
42 in. McCully Mammoth Gyratory.
5 No. 19, 25, 37 & 49 Kennedy.
18 in., 24 in., 30 in., 36 in. and 48 in. Symons Disc.
4—10 TZ Traylor 4 ft. Gyratory.
4—Nos. 5, 5 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory, also 16 inch. 8 in. Traylor T. Gyratory.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 inch Superior McCullys.
SYNCHRONOUS MOTOR GENERATORS
100 K.W. RIDGWAY 3/60/2200-250-275 volt.
150 K.W. GEN. ELEC. 3/60/2200-250-275 v.
200 K.W. RIDGWAY 3/60/2200-250-275v.,900 rpm.
SLIP RING MOTORS
52 H. P. GEN. ELEC. 3/60/440 v., 1200 rpm.
(3) 100 H.P. GEN. ELEC. 3/60/440v.,900-1200 rpm.
CONVEYOR PARTS
BELT: 1000 Ft. 60 In., 700 Ft. 40 In., 600 Ft. 36 In., 800 Ft. 30 In., 1642 Ft. 24 In., 517 Ft. 20 In., 207 Ft. 18 In., 500 Ft. 16 In., 300 Ft. 14 In.
IDLERS: 54 In., 42 In., 36 In., 30 In., 24 In., 20 In., 18 In., 16 In. & 14 In.
Head & Tail—Pulleys—Takeup for all sizes
Steel Frames: 2,000 Ft. 24 In., 30 In. & 36 In. Sections.
ROTARY DRYERS AND KILNS
36 In. x 20 Ft., 3 Ft. x 30 Ft., 4 Ft. x 30 Ft., 54 In. x 30 Ft., 42 In. x 24 Ft., 5 Ft. x 30 Ft., 5 Ft. x 16 Ft., 5 Ft. x 60 Ft., 6 Ft. x 60 Ft., 6 Ft. x 20 Ft., 6 Ft. x 70 Ft., 10 x 20, 7½ x 100 & 8x110 Ft. Kilns.
STEEL DERRICKS
GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.
LOCOMOTIVES
GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14 and 30 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 40 Ton.
DIESEL: 4, 8 & 15 Ton.
SCREENS
VIBRATING: 2x4, 3x6, 12x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72 & 4x12, 1, 2 & 3 Deck.
HUMMER, ROTEX, NIAGARA & ROBINS.
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x23, 4x24, 5x30, 5x20, 6x20.

TIDEWATER EQUIPMENT & MACHINERY CORP.
COMPLETE PLANTS BOUGHT AND SOLD
Lincoln Bldg., 60 East 42nd Street
New York, N. Y.

LIQUIDATION
FEDERATED PRODUCTS CORPORATION
NEW BRUNSWICK, N. J.

1—Rotary Kiln, 8' x 85'
1—Rotary Kiln, 8' x 90'
3—Steel Buildings 48' x 58', 55' x 99', 40' x 54'
4—Steel Bins 10' x 10' x 6', 12' x 12' x 12', 9' x 8', 8' x 8', with hopper bottoms with supports
2—Belt Conveyors, 16" x 50' and 16" x 56'
6—Jeffrey Bucket Elevators, 17' to 35' centers
14—Motors, 2/60/220, from 1 to 100 HP.
Large quantity of corrugated sheeting, piping, shafting, Tanks, Pumps, etc.

Send for Catalog.

4—Rotary Dryers 3' x 11', 56" x 30', 6' x 40', 8' x 80'
1—Christie Full Diesel Engine, 100 HP
1—Rod Mill 5' x 10' approx., self-balancing type
4—Concentrating Tables 25 to 40 ton capacity
4—Trommel 36" x 36" Screens, new
1—Allis Chalmers Rotary Screen 40" x 18'
1—Jeffrey 24" x 24" single Roll Crusher
1—Ingersoll Rand Compressor ER-1, 14" x 12", belt driven
4—Tyler-Hummer, Sturtevant Vibrating Screens
4—Williams, Gruendler Hammer Mills

BRILL Equipment Corporation
183 Varick St.
New York City

LOCOMOTIVES SHOVELS — CRANES CARS

1—67 ton Porter 6-wheel Saddle tank, A.S.M.E. Boiler, Overhauled.
2—38 ton Vulcan 4-wheel Saddle Tanks, A.S.M.E. Boilers, Overhauled.
1—32 ton Porter 4-wheel Saddle Tank, Overhauled.

2—78 ton American 0-6-0 separate tender switchers, completely overhauled. I. C. C. condition. Built 1923.

1—17½ ton Brownhoist Locomotive Crane, Overhauled, New A.S.M.E. Boiler.

Crane or Dragline Fronts for Marion 37 and Bucyrus 50-B, One Each.

1—1½ Yd. Rehandling Clamshell Bucket, Practically New.

Birmingham Rail & Locomotive Co.
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40 to 1000 HP Diesel Engines, various makes.
1¼ and 1½ yd. Northwest Cranes—Draglines.
587" Ingersoll Rand Motor Drive Compressor.
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JAW TYPE: Traylor 60x84, 48x60, 42x48, 24x72, Superior 84x66 & 24x36. Buchanan 30x42, Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x36, 9x30, 15x36.
REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 3-F & 40. Traylor 36" TZ, 8", 10", 12". Super. McCully 6" & 10". Newhouse 5, 7 & 10". Symons Cone & Disc Ty. 2' to 4'.
ROLLS: Allis-C. 12½x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16, Etc., Etc.
HAMMERMILLS: Williams No. 1, 2, 3, 4, 8 & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40., Etc.
MILLS: Kennedy Ball 4x6, 5x6 & 5x8. Marcy 8x6 & 10x9. Hardinge 6'x2', 8'x30" & 6'x9". Misc. Tube Mills 5' & 6' x 22'. Sturtevant Ring Roll. Raymonds, Kents, Fuller-Lehigh, Etc., Etc.
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200 ton rock storage bin, steel, heavy construction.
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1½ yd. heavy duty Blaw Knox digging bucket.
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Universal 7½ ton truck crane, pneumatics.

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RD-4 Caterpillar, with bulldozer.
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8—3 yd. V type 36" ga. side dump cars.

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Gyratory crushers: K.V.S. 30, 37-S, 49; Telsmith 32, 8A, 8B; Traylor 8"; McCully 13", 8", 6".
Jaw: 6x12, 9x16, 10x20, 12x26, 13x30, 15x30, 16x32, 36x48, 48x60.
Symons 4' cone crusher, complete.
Complete portable rock crushing plant, nearly new, with crusher, elevator, screen, etc.

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Gyratory: 8" Traylor, Nos. 25 & 37 Kennedys
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Clamshell Buckets—½, ¾, 1¼ and 1½ yard
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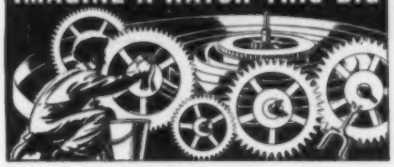

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1—Northwest Model 104, ser. No. 2079, 45' boom, 1¼ yd. bucket; with 1 yd. shovel attachment.

3—Northwest Model No. 4's, Ser. No's. 3441, 3445, 3493, with 40' boom and 1 yd. pull shovel attachments.

2—Northwest model 105, ser. No. 1645, 1522, 40' boom, 1 yd. bucket.

3—Osgood Heavy Duty, ser. No. 2069, 2087 and 2403, 40' boom, 1 yd. bucket and with 1 yd. shovel attachment.

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1—P&H Model 206, Ser. No. 1901, ¾ yd., 40' boom.

1—Byers Bearcat Model No. 128, ½ yd. cap., ser. No. 4119 with 30' boom.

1—Byers Bearcat model 27, ser. No. 5289, 30' boom, ½ cl. sw. ½ yd. bucket.

1—Erie Steam Crane, ¾ yd., 40' boom.

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7—Jaw Crushers: 1—15x36" Universal; 1—15x36" Cedar Rapids; 1—15x26" Champion; 1—12x20" Acme; 2—10x 20" Climax No. 2½"; 1—9x16" Acme.

4—Gyratory Crushers: 1—No. 5 Allis-Chalmers; 1—No. 5 Austin; 1—No. 5 Gates; 1—No. 0 McCully.

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30—Locomotives, gas, electric and steam, 2 to 20 tons, 24", 36" and standard ga.

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2—10" Morris Dredge pumps to direct connect to motor.

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5", 10", and 12" malleable Pallets, with corners.
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25 steel racks. 1 Wheelbarrow Scale.
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1—15 ton Brownhoist.
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3—4 motor type AC current bucket operating 5 and 10 tons capacity having spans 17'6"—46' and 61'8" some with overhang some without. Ideal for material handling and concrete piles, etc. Excellent condition.

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1—Sauerman 1 yd. capacity dragline bucket with carrier equipment.

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1—24" x 24" all steel single roll crusher. Condition same as new.

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2—Sets of Buchanan all steel crushing rolls 48" diameter, 30" face. Condition for immediate service and delivery.
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1—450 H.P. 4 cylinder, 4 cycle, solid injection 225 RPM with or without 300 KW AC 2200 volt generator.

JAW AND GYRATORY CRUSHERS

All sizes and types.

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1—Sullivan electric dragscraper or sluicing hoist, double drums, 60 H.P. 440-2200 volt, AC motor.
1—Sauerman steam slackline or cableway hoist, cylinders 10 x 12.
1—Sauerman double drum dragscraper hoist, electric, 75 H.P. AC 440 volt.
1—60" dia. x 36" face.
1—72" dia. x 30" face single drum mine type hoist, 150 H.P.
1—78" dia. x 72" face, 300 H.P.
1—50" dia. single drum hoist, 100 H.P. motor.

DRYERS

1—6' x 60' single shell. 1—76" x 56'.
1—6' x 30'. 1—50" x 40'.

DREDGE PUMP

1—Morris 10" dredge pump, manganese fitted, belt drive.

MOTOR GENERATOR SET

1—100 H.P. 440 volt AC to 65 KW 230 volt DC.

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3—Baldwin 2-6-2 type, cylinders 17 x 24, tractive effort 23,100 lbs., oil burning with tenders.
2—Baldwin 2-8-0 type, cylinders 18 x 24, oil burning with tenders.
1—Vulcan 66 ton 0-6-0 saddle tank, cylinders 18 x 24, National Board boiler.
1—Porter 50 ton 4 wheel saddle tank, cylinders 16 x 24".
6—Plymouth and Whitcomb 7 and 8 ton gas.

LOCOMOTIVES NARROW GAUGE

6—Vulcan and Porter locomotives 15 to 25 tons, steam, 36" gauge.
6—Plymouth and Whitcomb 5, 7, 12 and 16 tons capacity; 24, 30 and 36" gauge, gas.
Vulcan, Porter and Heisler 15 to 40 tons, 36" gauge, steam.

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1—P & H, Model 900, full revolving crawler tread diesel powered shovel, 3 or 3½ yd. dipper, 200 H.P. Fairbanks Morse diesel motor. Weight 311,000 lbs., for sale or rent. Located Cooley, Minnesota.

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505 "	36"	6	1/8"	1/16"	"
856 "	30"	6	1/8"	1/16"	"
520 "	30"	5	1/8"	1/16"	"
180 "	24"	6	1/16"	1/16"	Elevator
2305 "	24"	5	1/8"	1/32"	Conveyor
1298 "	24"	4	1/8"	1/32"	"
250 "	22"	8	1/16"	1/16"	Elevator
1874 "	20"	5	1/8"	1/32"	Conveyor
520 "	20"	4	1/8"	1/32"	"
506 "	18"	6	1/16"	1/16"	Elevator
1765 "	18"	4	1/8"	1/32"	Conveyor
285 "	16"	6	1/16"	1/16"	Elevator
1450 "	16"	4	1/8"	1/32"	Conveyor
516 "	14"	6	1/16"	1/16"	Elevator
509 "	14"	4	1/16"	1/32"	Conveyor
420 "	12"	6	1/16"	1/16"	Elevator
385 "	12"	4	1/16"	1/32"	Conveyor

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8-b Telsmith primary crusher, high speed shafts and roller bearings. Good condition.
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8" Morris Manganese Steel Sand Pump, New Castings and Impeller. With base for direct connection $450.00; without base, $400.00. Serial No. 98409-8 A. Also 5" and 4" High Pressure Water Pumps.
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1—Stiff legged steel derrick, 10-ton capacity, 40' mast, 75' boom, steel lattice construction, equipped with 3-drum Clyde hoist with independent swinger, and 1-cu. yd. Blaw-Knox clam shell bucket. Without motor.
1—Stiff legged steel derrick, 10-ton capacity, 40' mast, 75' boom, steel lattice construction, equipped with National 3-drum hoist with independent swinger, and 1-cu. yd. Blaw-Knox clam shell bucket. Without motor.
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....Admixtures
....Aerial Tramways
....Aggregates (Special)
....Agitators
....Air Compressors
....Air Filters
....Air Separators
....Ash Receptacle Molds
....Asphalt Mixing Plants
....Batching Plants
....Bags
....Bagging Machines
....Balls (Grinding)
....Barges
....Batchers (Weighing)
....Bearings
....Belt Repair Equipt.
....Belting (Conveyor & Elevator)
....Bin Level Indicators
....Bins (Storage)
....Blasting Supplies
....Block Machines, Building
....Boats
....Brick Machines & Molds
....Buckets
....Building Tile Machines
....Bulk Cement Batching Plants
....Bulk Cement Storage Plants
....Bulldozers
....Bullscrapers
....Burial Vault Forms
....Calcining Equipment
....Calcium Chloride
....Carbon Dioxide Plants
....Cars (Industrial)
....Catch Basin Block Machines
....Cement Colors
....Cement Process
....Central Mixing Plants
....Chimney Block Mach. & Molds
....Clarifiers
....Classifiers
....Coal Pulverizing Equipment
....Concentrators
....Concrete Mixers
....Concrete Paints & Coatings
....Concrete Waterproofing & Dampproofing
....Contractors (Cement Mill)
....Conveyors
....Conveyor Idlers and Rolls
....Coolers
....Corn Crib Block and Tile Machines
....Correcting Basins
....Cranes (Crawler & Locomotive)
....Crushers
....Crushing & Screening Plants (Portable)
....Culvert Pipe Mach. & Molds
....Curing Equipment
....Curb Forms
....Derricks
....Dewatering Equipment
....Diesel Engines (Stationary & Automotive)
....Dippers & Teeth
....Disintegrators
....Dragline Cableway Excavators
....Drain Tile Machines
....Dredges
....Dredge Pumps
....Drills (Rock)
....Drill Bits
....Drill Sharpening Machines
....Drill Steel
....Drives (Gear Reduction)
....Dry Batch Conveyors
....Dryers
....Dust Collecting Systems
....Dust Precipitators
....Dust Recovery Plants
....Dynamite
....Electric Motors
....Electrostatic Separators
....Elevators
....Engineering Service (Consulting & Designing)
....Engines (Diesel, Gasoline, Steam)
....Feeders
....Floor Tile Machines
....Flotation Equipment
....Garbage Receptacle Molds (Concrete)
....Garden Furniture Molds (Concrete)
....Generators & M-G Sets
....Guns (Hydraulic)
....Gutter Block Machines (Concrete)
....Hoists
....Hoppers
....Hose
....Hydrators (Lime)
....Induced Draft Fans
....Joist & Slab Machines (Concrete)
....Kilns (Rotary, Shaft, Vertical)
....Laboratory Apparatus
....Lift Trucks
....Lime (Hydrated)
....Lime Handling Equip.
....Lime Plants
....Lime Putty Plants
....Loaders
....Locomotives
....Lubricants
....Manganese Steel Parts
....Mills (Ball, Compartment, Emery, Hammer, Rod, Roll, Tube)
....Mortar Mixers
....Pallets (Steel, Wood)
....Pans, Grinding (Wet & Dry)
....Perforated Metal
....Pipe (Dredge)
....Pipe Molds and Machines (Concrete)
....Plaster Mixers
....Pneumatic Hammers
....Portable Aggregate Plants
....Pulverizers
....Pumps (Pulverized Material)
....Railway Equipment
....Rectifiers
....Recuperators
....Refractories
....Rewashers (Screw)
....Rock Wool Cupolas
....Roofing Tile Machines
....Sand Drags
....Sand & Gravel Plants
....Sand Lime Brick Machinery
....Sand Settling Tanks
....Scales
....Scrapers (Power Drag)
....Screens (Revolving, Vibrating, Etc.)
....Seal Rings
....Septic Tank Molds
....Sewer Pipe Machines
....Shovels (Power)
....Silos (Storage)
....Silo Stave Machines
....Slakers (Rotary)
....Slurry Mixers
....Slurry Pumps
....Slurry Separators
....Slurry Thickeners
....Soft Stone Eliminators
....Speed Reducers
....Structural Steel Fabrication
....Tampers (Hand & Power)
....Tanks (Storage)
....Tires
....Tractors
....Transit Mixers
....Trucks (Agitator)
....Trucks (Dump)
....Trucks (Industrial)
....Trucks (Mixer Body)
....Unloaders
....Unloaders (Boat)
....Unloaders (Box Car)
....V-Belting
....Vibrators (Bin)
....Wagons (Dump)
....Wall Forms & Machines (Concrete)
....Washers (Sand, Gravel & Stone)
....Welding & Cutting Equipt.
....Well Curbing Mach. & Molds
....Wire Cloth
....Wire (Copper, Iron & Steel)
....Wire Rope
....Wire Rope Fittings

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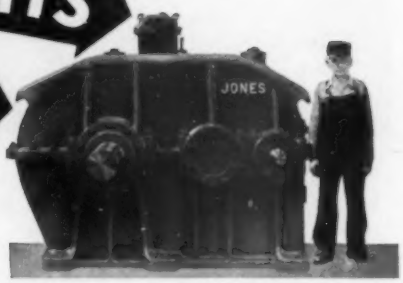

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